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## PHYSICAL GEOGRAPHY OF THE SEA.\*

AMONG the many titles to fame of the venerable Humboldt, none is so highly merited or so peculiar to himself, as that earned by his labors on the Physical History and Geography of the Globe. In the earlier days of this Review the teaching of geography, as then understood and practiced amongst us, was a dry and barren task; tedious to the teacher, distasteful and of slender profit to the scholar. Bald catalogues of easily forgotten names, (*locorum nuda nomina*, as Pliny calls them,) uninformed by science and scantily illustrated by history, formed the staple of the study. Nor was any part of education more defaced by the coarser mechanism of book-making. Errors of fact, and even of nomenclature, were perpetuated from one edition or compilation to another, with little regard to original accuracy, or to the changes going on in the world. And even where some frag-

ment of history or physical science broke in upon the network of names, it was often of doubtful authenticity, or too partial and detached to give real knowledge or gain hold on the memory. This is not an exaggerated view of the manner in which geography was generally taught in England down to a recent period.\*

The more exact study of history had already improved the methods and extended the sphere of geography, before

\* The progress made in the last quarter of a century in the philosophical study of the earth is nowhere more perceptible than in the books of geographical reference to which we have now ready access. At the head of these we have great pleasure in placing Messrs. Fullarton's "Gazetteer of the World," or, as it is more properly entitled, "Dictionary of Geographical Knowledge"—a work which has recently been completed, and which combines to a remarkable extent comprehensive views of the physical geography of the globe, with a vast amount of political and statistical information, and all the minuteness and accuracy which is required in a dictionary of places. We know no book of equal excellence on these subjects in any other language. Not less meritorious, though more compendious, are Mr. Keith Johnston's contributions to geographical literature. The Gazetteer which bears his name is remarkable for its completeness; and his Atlas of the United States of America supplies a deficiency which has long been felt on both sides of the Atlantic.

\* *The Physical Geography of the Sea.* By Lieut. MAURY, U. S. Navy. London and New York: 1856.  
*Arctic Explorations in the Years 1853, 1854, and 1855.* By Dr. KANE, U. S. Navy. Philadelphia: 1856.

*Considérations Générales sur l'Océan Atlantique.* Par PHILIPPE DE KERHALET. Paris: 1853.

physical science had fairly annexed itself to the subject, creating new associations, of high interest in themselves, and fertile in their influence on the condition and welfare of mankind. We have spoken of Humboldt as the philosopher who especially contributed to the establishment of Physical Geography as a branch of science. The natural phenomena, indeed, upon which it is founded, being ever present and patent to observation, could not have escaped record; and this record was becoming continually more copious, through its connection with other branches of natural knowledge. But there was yet wanting a clear specification of the scope and objects of the science thus gradually evolving itself; and of the methods best fitted for their attainment. It is here that we owe to Humboldt's peculiar genius, aided by the vast resources derived from travel and personal observation, not merely the definition of the objects in view, but their illustrations by those various writings and researches which will carry his name to posterity. The globe has been to him much more than a mere superficial delineation of land and sea, of mountains and rivers, of terrestrial divisions, and other human landmarks. His researches have comprised, under a closer and more connected view, those great physical characters of the earth's surface, through which alone we can learn the changes it has undergone or is yet undergoing—the physical elements and forces which have been concerned, or are still active, in producing these changes—and the agents and means by which change is limited, and general stability maintained.

In assigning to Humboldt the foremost place among those who have given to Physical Geography the name and character of a science, we must add that this great field has since been full of laborers, zealous in their work, and bringing to it numerous aids and appliances furnished by other branches of natural knowledge. Scarcely, in truth, is there one which has not been made to contribute, directly or indirectly, to Physical Geography in the full meaning of the term. When earth, ocean, and atmosphere all come within its sphere, as well as those great and mysterious forces—gravitation, heat, light, and electricity, by which these several elements of our planet are so powerfully and incessantly acted upon, it will be seen how closely the subject is linked with every

other research into the world of nature around us. Our countrywoman, Mrs. Somerville, has well expanded these relations in her admirable volumes on Physical Geography. The Physical Atlas of Berghaus, a valuable German work, preceded the publication in this country of the more extensive and elaborate "Physical Atlas of Natural Phenomena," by Mr. A. Keith Johnston, of which it would be difficult to speak in terms above the mark of its actual merits; embracing every part of the subject, it delineates to the eye as well as the mind, and far better than by any verbal description, those complex relations of physical phenomena on the globe, which are the true foundation of Physical Geography.

Of all branches of science, none comes so largely in aid of our knowledge of the present condition of the globe as the wonderful conclusions Geology has drawn from the condition of the globe in former ages. Such are the power obtained, through the study of fossil remains, of identifying strata in localities the most remote, and thus fixing the common epoch of certain states or changes of the crust of the globe—the facts discovered, proving the gradual upheaval of portions of the earth's surface, and the slow depression of others; the proofs from the inclination and contortions of strata, from the alterations of the older strata, and from the position and elevation of the unstratified rocks, that various changes, more abrupt and violent, have occurred from subterranean forces; the evidence derived from the direction, parallelism, and other aspects of mountain chains, as to periods of contemporaneous elevation—the influences upon climate of lands elevated above the sea or depressed below it; and further, the whole history of that coral creation, by which, under the slow working of microscopic forms of animal life, islands and reefs are raised from the depth of the ocean, to become the habitation of other and higher existences.

We have thus far spoken of Physical Geography in its largest acceptance. But the rapid extension of all science of late years has naturally led to subdivisions, ever becoming more special, as facts have multiplied and new fields have been laid open. Even in those profound researches of our own time, directed to prove the intimate physical connection, if not identity, of certain of the great agents which



govern the movements and changes of our globe, and probably of other animated worlds, and thus to concentrate physical facts and laws within a closer circle, these divisions are still necessary to guide to ulterior labor, and to give method and precision to its results.

Physical geography has just been submitted to this process of division; and the phrase of "Physical Geography of the Sea," proposed by Humboldt to express it, is the title of the first of the works now before us. Under this title, its author, Lieutenant Maury of the United States Navy, includes all that concerns the great domain of waters over the globe—the oceans, seas, and basin-lakes into which they are distributed; their various depth, temperature, and saltness; the currents which permanently or periodically pervade them; the phenomena of the tides; the phenomena of winds, whether constant or irregular, whether the gentle and steady trade-breeze, or the hurricane and cyclone; the law of evaporation belonging to different latitudes of the watery world; the less known, yet certain agency of magnetic or electrical forces—and the mutual influence of ocean and land in all these physical actions and changes. This summary statement shows how vast and various are the objects in the division of science thus proposed. We find further reason for its adoption in the importance of all these objects to the principles and practice of navigation; a consideration of supreme weight in these days, when the ocean in its every part is covered with ships; shaped in new forms, moved by new forces, destined to new shores, and seeking to attain by new routes the highest speed of transit. Facts and phenomena, before unobserved, or barren of result, are now eagerly appropriated, and, by the science and ingenuity of man, made to minister to the great purposes of human intercourse over the globe. The ocean, once an obstacle, has become the high-road of nations. If steam has worked its wonders on the land, so it has also on the sea; and under a form surpassing, in grandeur of force and effect, all the other operations of this great agent of human power. Iron, that materiel which ministers in such endless ways to the uses of man, has scarcely less efficiency on the ocean than on land; and we have at this moment in progress before our eyes, a gigantic application of it to the building and propulsion of what

may better be called a moving maritime city than a ship; which, if successful in the issue, may effect mighty changes in the course of commerce and navigation over all the seas of the globe.

Acquiescing fully, then, in the name and distinction of "Physical Geography of the Sea," we may add that we consider Lieut. Maury a worthy interpreter of the great phenomena included under this title. Attached as Superintendent to the National Observatory at Washington, he has used this honorable position with much zeal and high intelligence, in forwarding objects of singular importance to his own country and to ours, and of general interest to all nations of the world. He published some years ago his "Wind and Current Charts," a valuable precursor of the present volume. To his assiduity, working through and seconded by his Government, we owe that conference held at Brussels in August, 1853, in which were found representatives from England, France, the United States, Russia, Sweden, Denmark, Holland, Belgium, and Portugal, occupied, at the very time when war sternly impended over Europe, in organizing plans for those coöperative labors on the ocean, those methodical records of winds, currents, tides, and temperatures which provide for the peaceful interests and progress of commercial navigation over the globe. Austria, Prussia, the Hans Towns, Spain, and Brazil subsequently offered their coöperation in the same great scheme. With observations thus multiplied on every side—the log even of the common merchant brig being admitted to its share in the work—facts will speedily become numerous enough to yield results of the highest certainty and value. The method of averages, now so potent an aid to all research, has especial application here, furnishing a secure road to conclusions which no detached observations could reach.

Though Lieut. Maury claims all seas for his province, the larger portion of his volume is occupied with the great ocean which separates the Old from the New World; a very natural effect of the supreme importance of the Atlantic in the commerce of nations, and of the greater knowledge thus attained of all its physical phenomena. It will be seen that we have given place on our list to another work, by Captain Philippe de Kerhallet of the French Navy, having more especial rela-

tion to this ocean; less scientific in its character than that of Lieut. Maury, and less animated and vigorous in its descriptive part, but nevertheless containing much that is of great practical value for navigation.

We place further before our readers the title of another book, "Arctic Explorations in the Years 1853, 1854, and 1855, by Dr. Kane," partly because it is the latest record of discovery in the physical geography of the sea, partly because this record is contained in one of the most interesting and pathetic narratives it has ever fallen to our lot to peruse. The discovery itself has close kindred in many ways with others before made in the same stern regions of ice, winter, darkness, and desolation. What had been before described as a closed inlet of the sea, at the northern extremity of Baffin's Bay, was found to be a strait, leading due northward, and followed by Dr. Kane's party—with ship and sledge, and human eye stretching beyond—to latitude  $82^{\circ}$ ; leaving a distance thence to the North Pole scarcely exceeding that between London and Aberdeen. At this remote point it is that we obtain the great result of this perilous and painful voyage—the spectacle of a wide open sea, stretching northward beyond the dense barrier of ice, which jams up the entrance of the strait; and giving the best evidence we yet possess that such sea spreads freely forward to the pole. We are bound to say, however, that this notion of an open Polar Sea still awaits further confirmation. Dr. Kane himself, retained by illness in his vessel, was not of the exploring party which achieved the result just stated. One of the most intelligent of his crew, Mr. Morton, who had previous experience in Arctic Seas, and a young Esquimaux taken up at the Danish settlements, were the two persons who, in June, 1854, from a promontory 400 or 500 feet high, looked upon what they conceived to be the open ocean toward the north. It is Morton's affirmation that, in the wide horizon thus obtained, "not a speck of ice could be seen;" and marine birds appeared in great numbers, which are rarely found except where there is a sufficient expanse of open water to yield them food. Morton adds in his report of this extremely high latitude: "I can not imagine what becomes of the ice. A strong current sets it almost constantly to the south; but

from altitudes of more than 500 feet I saw only narrow strips of ice, with great spaces of open water from ten to fifteen miles in breadth between them. It must therefore either go to an open space in the north or dissolve." This remarkable observation corresponds with a passage of Lieutenant Maury's book on the currents which force their way through or beneath the ice of the Polar Sea. It must, however, be remembered that all distant ocular observations on the fields of ice or water in the Arctic regions are fallacious. The atmosphere generally renders it difficult, if not impossible, to distinguish ice from water at a distance of more than ten or twelve miles, and there is no proof of open sea but actual navigation.

The publication of these most interesting and most painful volumes has occurred at a seasonable moment to warn the British Government and the public against the further prosecution of these inhuman and abortive expeditions; and we rejoice that the Admiralty have refused to sanction a fresh search for the remains of Franklin's ships. But, meanwhile, Dr. Kane himself has added another illustrious name to the list of Arctic victims, having sunk under the effects of the frightful sufferings he had to endure. It is afflicting to think of the courage and skill which has been wasted in these efforts. Dr. Kane's narrative betokens throughout those peculiar qualities of head and heart which preëminently fit a man for such an undertaking—high intelligence, great firmness and patience, and a kind and genial temperament. The hardships he and his seventeen companions underwent during the eighteen months they were pent up in the ice, from which they only escaped by the abandonment of their vessel, exceed, perhaps, those of any living navigators in these regions: we recoil from associating them with the imagination of what may have been the condition of our own brave countrymen; whose loss we have too much reason to believe in and deplore. These volumes are illustrated with a degree of taste that does credit to American art; and they have the merit of a clear, unaffected style, with much power of graphic narrative, whether applied to the scenery of these Arctic regions, or to the toils and dangers undergone, or to the social state of the small body of men Dr. Kane commanded, if we may so speak of the strange life of darkness, cold, sickness, and starva-

tion which was endured during the two long winters of this voyage.

Recurring now to the principal volume before us, we think it right to premise a few remarks upon the method of this work, and upon some points in its execution. Considered as a scientific treatise, Lieut. Maury has not done full justice to himself or to his subject, by his manner of dealing with it. We are unwilling to be hypercritical where there is so much real merit; but it is impossible not to see in his work a desultory desire for novelty, occasionally going beyond the bounds of true inductive science, and venting itself in a phraseology which loses its force and effect by being too sedulous to attain them. With a little more constraint upon his speculations, and a clearer separation of fact and hypothesis, he would be a valuable scientific writer: with somewhat less intention of fine writing, he would be an eloquent one. We refrain from giving passages to illustrate or justify these criticisms; believing, from the evident candor of the author, that he will appreciate their motive, and apply them to future editions of his work, as far as this can reasonably be done.

It is with reluctance that we advert to another characteristic of this volume: we mean the very frequent and incautious reference to passages in Scripture; not solely for illustration, but even as authority for physical truths, or argument for hypotheses still unproved. Lieut. Maury is evidently a man of strong and sincere religious feelings, and we honor the earnestness with which he expresses them. But he unhappily does not see that in forcing Scripture to the interpretation of physical facts, he is mistaking the whole purport of the Sacred Books, misappropriating their language, and discrediting their evidence on matters of deep concern; by applying it to objects and cases of totally different nature. This *pia deflexio*, as it has been termed in instances of still more serious import, must ever be regarded as an injury done to real religion; and we are anxious now, as at all times, to enter our remonstrance against it.

The passages thus misapplied are chiefly taken from the Old Testament—the Psalms, the Book of Job, &c., which, in the pictures they give of the works and wonders of creation, need borrow nothing of that science they do not profess, to render them to all ages the most sublime

eulogies of the power and wisdom of the Creator. One example only we will cite, to show how much of error may enter into this loose and ill-judged method of dealing with Scriptural authority. After a passage, too laboriously ornate in its diction, where our author speaks of the allusions in the Bible to the laws of nature, as involving, under figurative language, hidden meanings which are only disclosed by the later revelations of science, he quotes, among other instances, the striking text from Job (38 : 21,) "*Canst thou bind the sweet influence of the Pleiades?*" or, as he gives it: "*Canst thou tell the sweet influence of the Pleiades?*" And this sublime but obscure interrogation he considers as solved by the recent observations and views of Professor Mädler of Dorpat, which make the star of Aleyone in the Pleiades to be the center of gravity of that vast stellar system to which our globe belongs as a small and subordinate planet.

Here we must first remark that he is obviously ignorant of the controversy as to this text, which has engaged the learning of Gesenius, Rosenmüller, Mason-Good, Herder, and many other scholars; leaving the interpretation still difficult and uncertain. He seems himself to have quoted from some translation which doubtfully takes half the sense from the Septuagint, (*Συνῆκας δὲ τὸν δεσμὸν Πλειάδος;*) omitting altogether the conception of a *link* or *binding together*, which is kept in our authorized translation, and which so happily applies to the close and beautiful aggregation of stars in this group; an aggregation of such kind that astronomers have calculated the chances to be more than half a million to one that they could not have been thus set in the heavens by accident alone.

The latter part of the passage in question is also of doubtful interpretation; and we may well ask, therefore, whether this is a text upon which to establish or confirm a conclusion of physical fact? But, further, our author assumes in his argument that Mädler's view of the Pleiades, as the center of the sidereal system, is "all but proved;" forgetting or ignorant that few astronomers have recognized it as more than a magnificent problem awaiting solution from future research; and that Sir J. Herschel especially has given a reason for distributing the doctrine, in the distance of the Pleiades from the plane of

the Milky Way; which plane must probably coincide with and define that of any general movement of rotation in the stellar system, should such exist. The science therefore of this comment is as ambiguous as the Scriptural quotation to which it is appended.

It may seem that we have dwelt too long on this matter; but we must repeat, in justification, our earnest desire that the authority of Scripture should not thus rashly be pledged to facts and opinions with which it has no concern, save in so far as it describes the visible manifestations of creative wisdom, beauty, and power. The example just given we consider to be apt illustration of the errors usually committed in this method of argument. Though less frequent than formerly, we still find them in some controversies of recent date, gaining a prompt influence over the public mind, as injurious, we believe, to the interests of true religion as of the sciences thus forced into contact with it.

We come now, and with more satisfaction, to the legitimate object of Lieut. Maury's work—the great watery empire of the globe; the aspects and phenomena of oceans and seas; their various physical relations, as well to the continents and islands they encircle as to the atmosphere incumbent over all; and that farther relation they bear to the efforts of human industry, intrepidity, and skill, which have rendered the most distant paths of ocean open and assured to all nations of the earth. The Atlantic is the especial object of our author's labors; and accordingly we find the first parts of his volume occupied almost exclusively with this ocean. Though we may explain the preference, we can not wholly acquiesce in it as preliminary to a physical history of the sea at large. The subject requires to be prefaced by those more general views of the distribution and relative configuration of water and land over the globe, which form the very foundation of physical geography, and are fertile in curious and important conclusions. Facts which, if stated at all, are loosely and incongruously scattered over the volume, ought to have been put before the reader in some connected form, as indicating the nature and magnitude of the objects concerned. Lieut. Maury plunges him at once into mid-ocean, without compass or guidance over its world of waters. A greater familiarity

with the writings of Humboldt, Ritter, Von Buch, and other authors, principally German, who have done so much for the study of physical geography, would have furnished both model and materials for a preliminary chapter, such as we desire for a work bearing this title, and dealing with objects so vast and various in kind.

We may cursorily state here, in illustration, a few of those general facts to which our author might fitly have given the priority suggested. First, the proportion of sea to land—determined as nearly three to one; or, in other words, that three fourths of the surface of the globe is covered with water. Then, the fact (important in its suggestion of a disparity in the forces which have acted on the two hemispheres) of the great excess of land in the northern hemisphere over that of the southern, being in the ratio of 11 to 4; from which condition arise the curious results that only 1-27th part of existing land has land diametrically opposite to it in the other hemisphere, and that the line of the equator, as it girdles the earth, rests on the ocean for five-sixths of its length. Another mode of estimating the properties and local relations of land and sea is obtained by halving the globe longitudinally on the meridian of the Canaries; when a much larger proportion of sea will be found on the western half or hemisphere so defined, than on the eastern. The main fact of the great predominance of water on the surface of the globe being thus proved, and its mean depth, as we shall see hereafter, approximately determined, we reach other conclusions, of high interest to almost every part of physical science. We will notice only one of these, in which geological theory, both past and prospective, is more especially concerned. The *mean elevation* above the sea-level, of all the land on the globe—islands as well as continents, mountains as well as plains—is estimated by Humboldt at somewhat less than 1000 feet. The mean depth of the great oceans of our planet is calculated by Laplace, from the tides and other phenomena, to be at least 21,000 feet. Thus, allowing full margin for errors, the entire submergence of the land might take place, leaving the central solid mass of the earth everywhere deeply covered with waters—an elliptical globe of ocean, moving still under the governance of the same sublime laws which had before guided its path through surrounding space.



This is enough to show what we should have desired as a foreground to the topics of Lieut. Maury's work. There is undoubtedly much to justify his partiality for the Atlantic as a subject for illustration; and we shall follow his example by limiting our remarks still more exclusively to what concerns this great Ocean—a volume itself in the "physical geography of the sea." Indeed our author devotes his first two chapters to a single current of the Atlantic, but this current, under the name of the Gulf Stream, includes physical conditions so remarkable, that we can not blame the priority thus given to its history. To use his own words:

"There is a river in the ocean. In the severest droughts it never fails, and in the mightiest floods it never overflows. Its banks and its bottom are of cold water, while its current is of warm. The Gulf of Mexico is its fountain, and its mouth is in the Arctic Seas. It is the Gulf Stream. There is in the world no other such majestic flow of waters. Its current is more rapid than the Mississippi or the Amazon, and its volume more than a thousand times greater. Its waters, as far out from the Gulf as the Carolina coasts, are of an indigo blue. They are so distinctly marked, that this line of junction with the common sea-water may be traced by the eye. Often one-half of the vessel may be perceived floating in Gulf-stream water, while the other half is in the common water of the sea; so sharp is the line and the want of affinity between these waters; and such, too, the reluctance, so to speak, on the part of those of the Gulf Stream to mingle with the common water of the sea."

This eloquent passage delineates, in terms happily chosen, some of the most striking features of this wonderful stream. But there are yet others to be noted; and we shall dwell, somewhat in detail, on a natural phenomenon thus remarkable: one, moreover, in which we, the people of the British Isles, have a direct and momentous interest, as well in reference to commerce and navigation, as to its certain and various influences on the climate under which we live.

The general description of the Gulf Stream, apart from any present question as to its sources, is that of a vast and rapid ocean-current, issuing from the basin of the Mexican Gulf and Caribbean Sea, doubling the southern cape of Florida; pressing forward to the north-east, in a line almost parallel to the American coast; touching on the southern borders of the

Grand Banks of Newfoundland, and at some seasons partially passing over them; thence, with increasing width and diffusion, traversing the whole breadth of the Atlantic, with a central direction toward the British Isles; and finally losing itself, by still wider diffusion, in the Bay of Biscay, on our own shores, and upon the long line of the Norwegian coasts. Its identity in physical characters is preserved throughout the many thousand miles of its continuous flow—the only change undergone is that of degree. As its waters gradually commingle with those of the surrounding sea, their deep blue tint declines, their high temperature diminishes, the speed with which they press forward abates. But taking the stream in its total course, it well warrants the vivid description of our author, and the name he bestows upon it of "a river in the ocean." This epithet (bringing to memory the  $\rho\omicron\eta$   $\Omega\kappa\epsilon\alpha\nu\omicron\tau\omicron$  of Homer) is, in truth singularly appropriate to this vast current, so constant and continuous in its course, and so strangely detached from the great mass of ocean waters; which, while seemingly cleft asunder to give path to its first impulse, are yet ever pressing upon it, gradually impairing its force, and destroying its individuality.

The maximum of velocity, where the stream quits the narrow channel of Bimini, which compresses its egress from the gulf, is about 4 miles an hour. Off Cape Hatteras in North Carolina, where it has gained a breadth of 75 miles, the velocity is reduced to 3 miles. On the parallel of the Newfoundland Banks it is further reduced to  $1\frac{1}{2}$  miles an hour, and this gradual abatement of force is continued across the Atlantic. The temperature of the current undergoes similar change. The highest observed is about  $85^{\circ}$  Fah. Between Cape Hatteras and Newfoundland, though lessened in amount, the warmth of the stream in winter is still  $25^{\circ}$  or  $30^{\circ}$  above that of the ocean through which it flows. Nor is this heat wholly lost when it reaches, and is spread over, the coasts of Northern Europe. The waters, thus constantly flowing to us from the tropical regions, bring warmth, as well as abundant moisture, to our own islands; and Ireland especially, upon which they more directly impinge, doubtless derives much of its peculiarity of climate, its moisture, verdure, and abundant vegetation, from this source. Were it needful to seek

proof of the permanence of the great natural phenomenon of which we are speaking, we might find it in those curious passages of ancient geographers—Pomponius Mela, and J. Solinus Polyhistor, for example—which describes the peculiarities of the Irish soil and climate eighteen centuries ago, almost as we should depict them now. But the influence of the Gulf Stream does not stop even here. The climate it may be said to convey is diffused, more or less, over the whole Norwegian coast; the aspects and produce of which singularly contrast with those of the corresponding latitudes in North America, Greenland, and Siberia. Other causes doubtless contribute to this effect; but none, we apprehend, so largely or unceasingly.

The influence of the temperature of the Gulf Stream upon animal life in the ocean is very curious. The whale so sedulously shuns its warm waters, as almost to indicate their track by its absence; while yet abundantly found on each side of it. The physical reasons are doubtless the same which prevent this great marine mammal from ever crossing the equator from one hemisphere to the other—a fact now well ascertained. The various species of fish, which are firm and of excellent flavor in the colder belt of sea upon the American coast, lose all their good qualities when taken out of the Gulf Stream, running closely parallel to it. On the other hand, the more delicate marine productions, whether animal or vegetable, which multiply and prosper by warmth, are redundant in the Gulf-stream, even after it has quitted the tropical regions whence its heat is derived. The food is thus matured for the whale field of the Azores, where this huge denizen of the seas flourishes in colder waters amidst the abundance so provided.

Lieut. Maury describes yet other peculiarities of this wonderful current. Its waters are found to be the warmest at or near the surface, cooling gradually downward, so as to render it probable that there is a bed or cushion of cold water between them and the solid earth lying below. Again, the surface of the stream is shown to be not strictly a plane; but having its axis or central portion raised somewhat higher than the level of the adjoining Atlantic; thus giving it a sort of roof-shaped outline, and causing the surface-water to flow off on each side. The ex-

istence of such surface-current has been proved by boats floated near the center of the stream, which drift either to the east or west, according to the side of the axis on which they may be. This curious fact has been attributed to the central waters of the current being warmest, and, therefore, of least specific gravity. It may be so; but we cannot altogether discard another physical cause; viz., the enormous lateral compression exercised upon the stream by the ocean waters through which it forces its way; tending to *heap it up* toward the axial line. Those who have beheld the wonderful spectacle of the Niagara River, three miles below the falls, so urged and compressed into a narrow ravine that the middle of the stream rises twelve or thirteen feet above the sides, will be able to conceive this hydrodynamic influence, even on the wide scale of operation which we have now before us.

There is some evidence that the waters of the Gulf-stream, when emerging from the Caribbean Sea, are saltier than those of the Northern Atlantic through which they flow. But as the difference scarcely exceeds a half per cent., we hesitate in believing, with Lieut. Maury, that this greater saltness is the sole source of the deep blue color they assume. We receive, too, with some distrust his speculations on what he considers the probable "*galvanic qualities*" of this great stream. We have little doubt, indeed, that the electrical element pervading, in one or other of its forms, the whole material world—giving motion and change to masses as well as molecules, and evolved or altered itself by every such motion and change—may have some concern, as cause or effect, in the natural phenomenon before us. But we perceive at the present time so much tendency to make use of this great power as the basis of vague and fruitless speculation, that we are always suspicious in the outset when we find its agency invoked to solve a physical problem. In the present instance we see no especial reason for having recourse to it. The physical conditions of the Gulf Stream—its definite direction, its force, its temperature, its saltness, its relation to Atlantic winds and storms, and its tardy intermingling with the mass of ocean—may be referred, with more or less probability, to other natural causes in certain and constant operation. We can not exclude electricity from the number, but

we must not invoke it on the slender evidence which our author places before us.

These considerations lead us to the theory of the Gulf Stream; a matter on which a good deal has been written; and speculations put forward on very insufficient proof. Such is the early opinion that it owes its origin to the river waters of the Mississippi, forcing a sea-current before them out of the Gulf-basin—an opinion at once refuted by the utter disproportion between the alleged cause and the observed effect. It would, in fact, be the case of 300 volumes of water put into rapid motion by one volume only—such, according to Livingstone's careful estimate, being about the proportion of the gulf to the river stream. Another hypothesis, again, to which the names of Dr. Franklin and Major Rennell give some sanction, assigns a higher level—a *heaping up*, as it were, of the waters in the Gulf of Mexico, in effect of those forced into this great basin by the trade-winds of the Atlantic; thereby giving to the Gulf Stream the character of an immense river descending from this higher level to a lower one. Lieut. Maury suggests, we think, valid objections to this hypothesis; and even contends, from the relative depth of the stream in the Narrows of Bemini and of Hatteras, that instead of *descending*, its bed represents the surface of an inclined plane with a descent from north to south, *up* which plane the lower depths of the stream must ascend. We are bound to say that he does not replace, by any complete theory, the opinions which he thus annuls. Nor is it, in truth, easy to frame one which shall meet all the conditions required, seeing the present imperfect state of our knowledge of the mutual influence and action of the mighty agents concerned in such phenomena—the ocean, the atmosphere, the rotation of the earth on its axis, the change of seasons, the tides, the heat and cold of different regions, and possibly magnetic or electrical influences, of the obscurity of which we have already spoken. All who are familiar with the science of Hydrodynamics and the theory of waves, know that these subjects involve problems requiring for their solution the highest mathematical power, based upon the most exact experiment and observation; questions which have exercised the genius of Euler, Lagrange, Poisson, Prony, Cauchy,

Weber, Venturi, and in our own country, of Brindley, Smeaton, Young, Scott, Russell, etc. The theory of the Gulf Stream has close connection in many points with these high problems, while at the same time complicated by its manifest relation to the great natural agents just enumerated.

We must, then, excuse in our author his somewhat desultory view of a phenomenon, of which no single or simple explanation can rightly be given. It is certain, from the permanent characters of the Gulf Stream, that he is correct in treating of it as part of a great *circuit* of waters in the Atlantic, determined and directed by natural causes of constant operation. One main influence we may presume to be, the tendency of the polar and equatorial waters to exchange and equalize their temperature by currents flowing at different depths through the ocean; a condition certain to exist, and well illustrated by the phenomena of those constant or periodical winds, which fulfil a similar object, by maintaining the needful balance of temperature in the great atmospheric sea around us. Nor is this reference to the trade-winds one of analogy only. We cannot doubt that they are concerned in keeping up the flow of those vast equatorial currents which, traversing the Atlantic from the African coasts, are pressed into the Caribbean Sea and Mexican Gulf on their southern side; and sweeping round this great basin and its islands, are mainly discharged through that narrow passage between Cuba and Florida, where the name of the Gulf Stream is first attached to the current. All its characteristics may best be explained under this general view. If a mass of waters be constantly thrown into the Gulf, a mass of waters must as constantly find exit from it. If the exit be narrow, the force of the stream will be proportionally augmented, by the unceasing pressure from behind; rendering it powerful and persistent enough to cleave the waters of the ocean; making a return-path for itself to the more northern parts of the eastern hemisphere, and carrying thither the warmth derived from the eternal summer of the equatorial seas.

We can have little doubt that this outline conveys the true theory of the Gulf Stream; associating it broadly with those great currents of circulation over the globe, which we know must be the cer-

tain effect of differences of temperature, but which may in part also depend on the diurnal rotation of the earth affecting the rate of motion and direction of such currents as they flow through different latitudes. The Arctic current setting into the Atlantic from Baffin's Bay, and transporting high icebergs to be dissolved by the warmer seas of the South, is well known as a branch of one of these circuits. The existence of a similar circulation of waters in the Pacific—the other great ocean which stretches from pole to pole of the globe—though less defined in its details, occurs in confirmation of this view. It is more directly corroborated by the old experiment of casting bottles into the sea containing dates of place and time; which transported in silent, slow, but certain course, give information to watchful observers on distant seas or shores. These mute interpreters of natural phenomena often render better service to science than the thoughts or theories of man. The chart drawn up by Admiral Beechy, representing the tracks of more than a hundred bottles, shows that all the equatorial waters of the Atlantic tend westward toward the Mexican Gulf, to issue thence in the Gulf Stream. Those thrown overboard in mid-ocean, or on any part of the African coast, have been found, after a certain lapse of time, either in the West Indies, or on the British shores, or floating in the course of the Gulf Stream between. There is even reason to believe that some bottles have been discovered on their second circuit; arrested probably on the coast of Spain by the drift southward, carried along the African coast into the equatorial seas, and thence again across the Atlantic to the Gulf of Mexico. The first among the valuable plates appended to Lieut. Maury's work clearly shows the course thus indicated, and illustrates the whole scheme of the mighty currents we have been describing.

Whenever a circuit of waters is thus formed, we have every reason, from tidal and other analogies, to look for an intermediate or central space, comparatively calm and motionless. And such a space is actually found to exist within this great ocean whirlpool. The "Mar de Sargasso," as the Spanish navigators termed the central portion of the Atlantic, stretching westwards from the Canaries and Cape Verde Islands—a surface fifteen times greater than that of Great Britain—may

be described as a vast stagnant pool, receiving the drift seaweed, which the surrounding currents fling into it, and generating on its calm surface what has well been called "an oceanic meadow" of seaweed, the *fucus natans* of botanists. It is in this tract of sea that we find such wonderful species of fuci as the *Macrocystis pyrifera*—having stems from 1000 to 1500 feet in length, and but a finger's size in thickness, branching upwards into filaments like packthread. This vast domain of marine vegetable life is the receptacle, as indeed are the waters of the ocean generally, of an equal profusion of animal existence—from the minute luminiferous organisms, which, to borrow Humboldt's phrase, "convert every wave into a crest of light," to those larger forms of life, many of which derive nutriment from the waters alone, thus richly impregnated with living animal matter. Reason and imagination are equally confounded by the effort to conceive these hosts of individual existences—*cette richesse effrayante*, as Cuvier terms it—generated or annihilated at every passing instant of time. No scheme of numbers can reach them, even by approximation; and science is forced to submit its deductions to the general law, that all the materials of organic life are in a state of unceasing change, displacement and replacement, under new forms and altered functions, for purposes which we must believe to be wisely designed, but which transcend all human intelligence.

It is interesting to possess a record of this Mar de Sargasso from the pen of the great mariner who first traversed it on his way to the discovery of a new world. In a letter written by Columbus, in 1498, he relates, that in each voyage from Spain to the Indies, he found, about 100 nautical miles to the west of the Azores, a wonderful change in the aspect of the ocean; so sudden, too, that he uses the word *raya* to mark the line of boundary. The sea became at once calm and still, scarcely ever moved by a breeze, but so suddenly and strangely matted over with seaweed as to suggest instant danger to the ships from running upon shoal banks. Nearly four centuries have elapsed since these phenomena were present to the eager and observant eye of Columbus; and they yet continue as they then were. The same currents sweep round the basin of the Atlantic; the same stagnant and



weedy sea still exists within the circuit of waters thus formed. How changed, meanwhile, the aspect of man's existence on the shores which bound this ocean; and how certain the greater changes during the ages which lie before us! Many of these changes, and such as may count among the mightiest now in progress, are due to the Atlantic itself, and to that permanence of its physical characters which we have been describing. Not only has it served to the intercommunication of the two hemispheres, but it may almost be said to have created the western, by the tide of human emigration carried across from the Old World to the new. Some of the greatest problems in government and social existence are awaiting their eventual solution in the races thus transplanted; and especially in the powerful nation, our own offspring, established on the wide and fertile continent of the West.

We can not touch upon this vast topic of human transit over the Atlantic, whether for commerce or migration, without recurring once more to the history of the Gulf Stream. Though in practical navigation its influence must often have been felt, yet this fact was scarcely recognized or distinctly recorded before the time of Franklin, whose sagacity, applied to certain special cases, showed him at once the value of a more exact knowledge of all belonging to this great current. One of these cases is curious enough to deserve mention. When in London, 1770, he was consulted as to a memorial sent from Boston to the Lords of the Treasury, complaining that the packets from Falmouth were generally a fortnight longer in reaching Boston than common traders from London to Rhode-Island, a passage fully 300 miles longer. Captain Folger, a Nantucket whaler, who happened to be then in London, was questioned by Franklin, and furnished him with the true explanation. The Rhode-Island traders were acquainted with the Gulf Stream, and kept out of it. The captains of the English packets, from ignorance or carelessness, or possibly seduced by the more genial temperature of this southern course, ran their vessels into the current and *against it*; making a difference in some parts of their voyage of not less than fifty or sixty miles in the daily run, besides the loss incurred from sailing in a lower latitude. Dr. Franklin made Folger, whose experience

caught him to avoid a stream in which whales are never found, trace out on a chart the course of this ocean-current, had it engraved, and sent copies to the Falmouth captains. These gentlemen, wedded to their old ways, or perhaps despising their informant, took no notice of the suggestion, and went on as before.

Franklin was also the first to indicate the temperature of the Gulf Stream as a valuable aid to the navigation of the Atlantic, especially on the American coasts; the dividing line between the warm stream and the cold waters of the ocean which hem it in, being so precise as well as constant, that the longitude may often safely be inferred from it. Lieut. Maury affirms, and we doubt not with truth, that this dividing line never changes its position in longitude as much as mariners then erred in their reckoning. He gives us also a very curious account of the relation of the Gulf Stream to the storms and hurricanes of this ocean, to which is due their frequent character of rotatory storms or *cyclones*; a name well adapted to the remarkable phenomenon so described. One passage here we will transcribe from our author:

"I am not prepared to maintain that the Gulf-stream is really the 'Storm King' of the Atlantic, which has power to control the march of every gale that is raised there; but the course of many gales has been traced from the place of their origin directly to this stream. Gales that take their rise on the coast of Africa, and even as far down on that side as the parallel of 10° or 15° north latitude, have, it is shown by an examination of log-books, made straight for the Gulf Stream: joining it, they have then been known to turn about, and traveling with this stream, to recross the Atlantic, and so reach the shores of Europe. In this way the tracks of storms have been traced out and followed for a week or ten days. Their path is marked by wreck and disasters. At the meeting of the American Association in 1854, Mr. Redfield mentioned one which he had traced out, and in which no less than seventy odd vessels had been wrecked, dismasted, or damaged."

Another storm, the direction of which is delineated on plate 10 of this volume, commences more than a thousand miles from the Gulf Stream, made a straight course for it, and traveled with it for many successive days, under the conditions of a whirlwind or cyclone. A fearful disaster, due to one of these hurricanes, occurred, in 1853, to the steamship "San Francis-

co," carrying a regiment of United States troops from New-York to California. Overtaken by the storm in crossing the Gulf-stream, 179 souls—officers and men—were swept overboard and perished. In this case, the knowledge possessed of the stream, its limits, direction, velocity, etc., greatly aided what was done for the discovery and relief of the unfortunate ship in question. The import of these and many similar facts to the future guidance of Atlantic navigation will readily be understood. It may be hard to account for them in theory, but their practical value can not be doubtful or mistaken.

Intending, as we have already said, to confine our remarks chiefly to that ocean, the Atlantic, on which Lieut. Maury himself best loves to expatiate, we shall follow him more cursorily through the other parts of his volume. The third, fourth, and fifth chapters of his work relate to the Atmosphere, in its various connections with the physical geography of the sea, as expressed by the phenomena of winds, of evaporation, of rains, of fogs, of temperature, and of electrical changes—a vast subject, and not less complex than vast. Multiplied though all its records have been of late years, and made more minute and accurate as well as numerous, Meteorology can not yet take its place among the exact sciences. We have just named some of the topics it includes; but there are yet others, which mix with and complicate all the results of observation. The weight of the air is one of these; an element involved as effect or cause in almost all other atmospheric changes, and deeply concerned in any theory of the winds. Again, we have those conditions of electricity, which are expressed by the wonderful phenomena of magnetism, acting through and upon all parts of the globe, solid, fluid, and aerial; and brought before us under a new aspect by Professor Faraday's discovery of the magnetic properties of oxygen as modified by heat. Even that other subtle element of Light—if indeed it be another and separate element—may in some sort affect the atmosphere, through which its action is transmitted to the earth and ocean below. As associated with, or, according to a recent philosophy, *converted into* heat, there can be no doubt of this influence. But the marvelous results which science has obtained from the chemical action of light,

in the various forms of Photography, justify the belief that other analogous effects may exist, though yet hidden from human observation. If electric states of atmosphere can convert oxygen into ozone, light, in its different degrees of intensity, can not well be supposed without influence, even on the inorganic parts of the aerial medium through which its passage lies. We know well its wonderful power in evoking the organic life, with the germs of which the atmosphere everywhere teems; and there is even reason to believe that this influence extends to different depths of sea, concurring with other causes to define those successive *strata* of animal and vegetable life which are so curiously attested as the result of the marine dredgings and soundings directed to this object.\*

We deviate thus far from our direct subject, merely to point out the singular complexity of these elements and relations, which make up the history of atmospheric phenomena, whether on ocean or land. Such, and so close, are these relations, that scarcely a change can occur in any one of them, without altering or disturbing, more or less, the balance of all. Science is seeking to disentangle these elements of action; and to obtain both more exact results, and knowledge of the relative agency of each in producing them. But longer time and wider averages are required to this end; and, meanwhile, what we must regard as needful is, patient and precise observation on all parts of the globe, and in all climes and seasons; aided by such an amount of *provisional* theory as may serve to the guidance of research, and to bind facts together, until they can be submitted to the governance of general laws.

These considerations may mitigate, though not wholly suppress, a criticism to which Lieut. Maury's work is liable here, and perhaps more or less throughout. He theorizes too largely and hazardingly, and does not clearly separate the *known* from the *unknown*. His volume is replete with valuable and ingenious suggestions; but they are not methodized enough for

\* We can not touch upon this latter point without a passing tribute to the memory of the late Professor E. Forbes; a man whose genius and eminent powers of observation had already placed him in the foremost rank of the natural philosophers of his time; and who, had his life happily been prolonged, would undoubtedly have added further to his own scientific fame, and to that of his country.

the uses of the common reader, who will probably rise from the chapters on winds and atmospheric currents, his head confused by a whirl of facts, and theories, and questions, as fleeting as the very air of which he has been reading. It must be admitted, indeed, that this subject of the winds of the ocean—whether permanent, periodical, or variable—is one of very difficult and intricate kind. The differences of temperature between the tropical and arctic regions, and the influence of the earth's diurnal rotation upon the currents of air thus produced, afford us a rational theory of the trade-winds. The periodical monsoons of the Indian Ocean, though depending in part on the same causes, yet are singularly modified by the proximity of great continents, islands, and mountain ranges; and though well known to practical navigation, their character is less certain, and their interpretation more obscure. Still slighter is our knowledge of the variable winds in those narrower seas of the globe, where the influences of the land become predominant over those of the ocean; phenomena in which we have great practical concern, but to which it is at present impossible to give any systematic form. It must further be kept in mind that our direct knowledge of the winds is derived from the lower strata of the atmosphere only. The aspects of clouds often show to the eye different or opposite currents at different heights: observations in balloons testify the same thing. Beyond this, our conclusions are simply inferential, but resting on reasons so explicit that we can not hesitate in believing the upper regions of the atmosphere to be traversed by currents of lesser density, but as determinate in space, time, and direction as the winds which sweep periodically over the surface below. The general equilibrium we find to be ever maintained; and this can only be effected by circuits and counter currents at different heights, according to the differences of temperature of each. The inference here approaches to a demonstration of the fact, though not reaching it by actual observation.

We can not speak with the same assurance of a speculation, which, however, is sanctioned by eminent names, viz., that the more sudden and violent gales of wind, the tornadoes and whirlwinds of the seas, are due to the upper currents of air bursting abruptly into those of lower level;

and by their different direction of movement, different temperature, and possibly difference of electrical state, begetting the various phenomena of storm on the ocean beneath. No better theory has yet been proposed for these hurricanes; and, default of such, we must admit it as one of the many meteorological questions open to future research.

We should abuse the patience of our readers were we to dwell longer on the subject of atmospheric currents thus encircling the globe and, under their various conditions, aiding or endangering the labors of man on the seas. The only remark we have further to add respecting Lieut. Maury's chapters on the atmosphere is, that he does not sufficiently allude to the influence of the variable weight of this great aerial ocean upon the ocean of waters below. Those who have attended to the phenomena and probable theory of the *Seiches* in the small basin of the Lake of Geneva, or witnessed the frequent and abrupt oscillations of a forty-foot water barometer, will be able to appreciate this element of unequal atmospheric pressure, as applied to the great watery surface of the globe. Nor do we find any allusion by our author to the singular fact recorded by Sir James Ross, of the permanently low barometric pressure in high southern latitudes; or to the curious observation of Professor Airey and Mr. Birt, on the periodical rise of the barometer in the course of every month to some point above 30", suggesting the notion of great atmospheric waves, ruffled by smaller waves in the intervals between. We must look to the future for a solution of these, and a thousand other difficulties in meteorology, which are beyond the reach of any tables or averages yet obtained. All such phenomena may be best studied under the equator, where there is little variation in the sun's meridian altitude; and where the zone of observation is symmetrically related to each hemisphere. The diurnal fluctuation of pressure is so regular there, that the time may generally be determined within 15 or 16 minutes by the barometer alone.

The "Depths of the Ocean," and the methods employed to determine them, form an interesting chapter in the volume before us. Until a very recent time these methods were so far imperfect that, though numerous soundings were made into the more profound depths which sail-

ors call "blue water," it could seldom be affirmed "that fathom line had truly touched the ground" in these abysses of the sea. In the southern Atlantic, more especially, results were given as obtained by British and American officers, which indicated depths varying from 26,000 to 50,000 feet, or from 5 to 9½ miles; and in several of these instances without any assurance of the plummet having reached the bottom. Here, in fact, lay the uncertainty of the whole process. Under currents might intervene, turning aside a slender thread and insufficient weight from the right line of descent; or, if allowing the weight to touch the ground, still acting upon the bight of the line, so as to cause it to run out too far from the reel in the vessel above.

We owe a better system of soundings to the active ingenuity of our American brethren on the seas. It was first decided that the twine used for this purpose must be of stronger texture; so as to bear a weight of at least 60 pounds, freely suspended in the air. This sounding twine is divided by 100 fathom marks. The weight employed is a simple cannon ball of 32 lbs. or 68 lbs. weight, so appended, that on touching the ground, it is detached from the twine; leaving, however, to reascend with the latter an ingenious little apparatus, the contrivance of Mr. Brooks of the United States Navy, which gathers and brings up specimens from the bottom of these deep recesses. Experiments made with lines thus constructed, have furnished a scale of the average time of descent for different depths, exact enough to tell pretty nearly when the ball ceases to carry the line out, and when therefore the depth is truly determined.\*

The result of these improved methods has hitherto been to indicate a lesser depth than was inferred from previous soundings. The greatest hitherto ascertained is in the North Atlantic, on the southern edge of the Banks of Newfoundland, where the ball touched the ground, and parted from its line, at about 25,000 feet, or nearly five miles below the surface. Yet if Laplace's calculation of four miles, as the mean ocean depth be correct, there must exist spaces with far deeper soundings than this; and

\* Lieutenant Maury gives in Plate 11, annexed to his volume, a general delineation of the depths of the Atlantic; probably the best yet published, but derived from soundings which are partly liable to the doubts noticed above.

such, in truth, we may expect to find when navigators apply their present resources to fathom those other vast oceans where the line has rarely been sunk for the purposes of science only, and where the phenomena of coral isles and volcanoes show conditions of deep subsidence as well as elevation, from physical action taking place in the interior of the globe. The time may come, but yet is far distant, when we shall be able to map this great submarine territory, with some approach to truth; and, in so doing, perchance obtain a further insight into those wonderful changes, paroxysmal or gradual, which the outer surface of the earth has undergone, in the course of ages, from central causes, hitherto reached by conjecture alone. Knowledge need never be despaired of from any source, however seemingly remote, where the connection of the physical science is becoming so intimate in all its parts. A single instance may be given as peculiarly belonging to this Ocean of which we are treating. In a remarkable memoir, by Prof. E. Forbes, on the "Connection between the existing Floras and Faunas of the British Isles, and the Geological Changes which have affected this Area," we find denoted, amongst other curious local relations of certain British species to those of the nearest opposite continents, the singular case of identity of several species in the South-west Irish Flora, with species found not nearer than the mountains forming the north coast of Spain. On various grounds Prof. Forbes concludes—and he was not a rash speculator in science—that the British Isles acquired this connection of their Flora and Fauna with that of neighboring lands, by emigration of species before the area they now occupy was severed from the greater continent. The speciality of the Irish case as to distance does not deter him from following out this conclusion. Boldly, but not without much show of reason, he draws a line of ancient continent across the Bay of Biscay, and yet further westward, into the actual Atlantic. Geology tells us of numerous changes and alterations of land and sea, similar in kind, and still vaster in extent. Those changes which we may suppose to have visited Britain, though far removed from man's knowledge, are comparatively recent in the history of the earth—presumably of later date than what has been called the *Meiocene epoch*. It might



seem as if a sort of specious reality were thus given to the ancient fable of the Atlantis: but no relation of time will serve us here, and the legend must be left in its old obscurity.

We can not quit this topic of the depth of the Atlantic without referring to one matter connected with it, far surpassing in grandeur any fable or imagination of antiquity—we mean the Atlantic Electric Telegraph, now in progress toward execution. The scheme, if not originating in a series of soundings across this ocean, has at least been matured and directed by them. These soundings, conducted chiefly by an American officer, Captain Berryman, have disclosed the existence, between Newfoundland and the western coast of Ireland, of a sort of plateau forming the bed of the sea, at a depth nowhere exceeding 2070 fathoms; and, what is of greater moment for its destination, having a very *uniform grade of descent* from each side toward this point of greatest depression, which is nearly equidistant from Valentia and St. John's, the assumed eastern and western termini of the submarine telegraph. The actual distance between these points is 1,900 statute miles; of which, about 1,500 miles intermediate between the dips from each side, and named by Lieut. Maury, the "Telegraphic plateau," afford a soft and singularly equable level; chiefly, it would seem, of calcareous rock, covered in great part with a layer of microscopic tropical shells, and well adapted in every way to receive the wonderful instrument of human intelligence which is about to be committed to this submarine bed. It has been surmised, and not without show of reason, that these very materials, forming the bottom of the plateau, may furnish a coating of natural concrete to the electric cable; adding to its stability of position, and lessening the chances of injury or destruction from the elements around; and, possibly, also affording a more perfect means of transmission of the electric action itself.

We can not afford space, and it would be alien to our subject, to dilate on this extraordinary project; but in the subjoined note we give a few of the more important details, which will serve briefly to illustrate the *mechanism* of the undertaking, commercial as well as scientific.\*

\*The capital destined to this enterprise is £350,000, divided into 350 shares of £1000 each; 262 of which

These details may interest many of our readers; but higher interest is involved in the whole discovery and design of the Electric Telegraph, whether on earth or submarine, as the astonishing result of a new element of power subjected to human uses and human will. Let it be simply recollected that one hundred and fifty years ago, this electrical action or force—we are obliged to hesitate in calling it *matter*—was known to mankind only in its elementary aspects of attraction and repulsion; while now it is recognized in all the great phenomena, organic and inorganic, of the globe, and has become the most wonderful instrument of power in our hands, for action on all the various forms of matter around us. So utterly was this element hidden from all prior knowledge, (for the thunder-storm still interpreted to the superstition of man, and not to his reason,) that its present development has almost the character of a new creation. If modern science finds cause to be proud of what it has achieved in these great discoveries, there is ample reason for humility in the many questions which still remain unsolved; even such as lie at the very origin of the subject, and

have been taken in England, 88 in America. The British Government, besides certain preliminary aids, guarantees 4 per cent on the capital, *when, and as long as the telegraph is in working order*, in remuneration for all the work done on government behalf.

The submarine cable through which the electrical current will be conveyed (to use a conventional language, which future knowledge may alter) is three fourths of an inch in diameter. The copper conducting-wires pass through it, coated securely with gutta-percha; and this central portion of the cable is covered and protected by strands of iron-wire, eighteen in number, each of these composed of seven iron threads loosely twisted together. The weight of the cable is about 2000 lbs., or somewhat less than a ton, to the mile. Though exceedingly flexible, it is capable of supporting six miles of its own length suspended vertically in water. The contract we understand to be for 2600 miles of this cable to be in readiness for use by the end of May, 1857.

The submersion, according to present plans, is to be effected by two steamers, each conveying half the cable. These vessels, meeting at the middle point in the Atlantic, will first effect securely the junction of the ends of the cable, and then separate—the one with a destination to Ireland, the other to Newfoundland—dropping the telegraph cable into the ocean, as they severally proceed; and exchanging frequent electric signals through it, to indicate their relative position, as well as to attest the completeness of the work accomplished. It is estimated that the whole cable may be laid down in its ocean depths in eight days from the time when the junction of the two halves has been effected.

were matter of speculation and perplexity to its earliest cultivators. A crowd of facts, and numerous subordinate laws, have been attained; but some higher and more general law is yet wanting to govern and connect the whole. The object, however, is now well defined, and the first philosophers of our time are pressing eagerly along the paths which lead toward it.

We are a little puzzled how to rate the chances of the Atlantic Telegraph as a pecuniary speculation apart from the guarantee which Government has given to it. It has no antecedents having likeness enough to justify any bold promise or assertion. We are forced to ask, if a flaw should occur from any cause, present or future, in this long line of submarine chain—if the price-current of cotton put into motion as a message from America should fail to move the needle on the Liverpool side—how is the faulty spot to be discovered, and how to be repaired? Every precaution, we know, has been taken which art or science could suggest, to guard against accident; but there are some elements concerned, such as the influence of time upon the instruments put into action, which it is not easy to submit to any calculation. Certain scientific difficulties also, connected with the theory of electric induction, and experimentally applied by Faraday to the case of wires conveyed by insulated submarine tubes, have suggested themselves as likely to retard, or otherwise impair, a current thus prolonged. The science, however, which is able to foresee these difficulties, is competent, we trust, to provide a remedy; and this question, as well as that of the best methods for “rapid signaling” by the electric telegraph, has engaged the notice of Professor Thompson, of Glasgow, than whom few men are better able to resolve it.

As to the practical results to the welfare of the world, and more especially of England and America, from the completion of this singular work, we are not altogether converted by the current phraseology of the day. It is easy to affirm that whatever gives fresh facilities to human communication is productive of good; and difficult, perhaps, to disprove the assertion. But, in so stating the matter, we must keep in mind that it is the *speed of intelligence* only which is here chiefly in question. Doubts may suggest themselves whether

the farthing-a-pound fluctuations in the price of cotton deserve a daily transmission across the Atlantic; especially as the same means may be used to tell almost simultaneously the same fact to every Liverpool broker, or Manchester manufacturer. The demand for any particular article of traffic, whether raw or manufactured, is rarely so sudden or impetuous as not to be able to await transmission by the next steamer. A criminal fugitive may be arrested at the moment of landing, by his description outrunning him on the ocean; but the tidings of friendship or family affection will not trust themselves to be interpreted by the vibrations of a needle, and the translations of a hired pen. Even in the more serious matters of diplomacy, we may indulge a doubt whether the old-fashioned pauses in intercourse were not as salutary as the instant communications of our own days; giving more time for passions to subside, and for first opinions to soften by reflection; and preserving to the diplomatist a responsibility, equally essential to his own honor and to the interests of the country he represents. We are aware, however, that there is a double face to all these points; and without pressing further any such ambiguous presages, we shall be ready and eager to join in the general gratulation on the success of an undertaking thus wonderful as an effort of human genius and power; and destined, we trust, to link together still more closely, in amity as well as intercourse, the two great nations already having kindred in origin, language, and common liberties.\*

We have occupied so much space with these various topics, that our notice of the other parts of Lieut. Maury's volume must be a very limited one. In a chapter on the “Salts of the Sea,” he propounds his views, and perhaps with some exaggeration, as to their influence in creating ocean

\* Some tokens of jealousy are perceptible in the American newspapers, as well as in the Senate, at the fact of the termini of the Atlantic Telegraph being both in the British territory. Without advertising to the very obvious physical reasons for this arrangement, we may express our belief, as well as hope, that it will never become a matter of political importance. We perceive that Lieut. Maury has recently published his opinion that any direct line to the United States would be impracticable, from the much greater depth of ocean, and from the prolongation of the cable to 3000 miles, a length probably beyond the power of transmission of a single electrical current.

currents by the different specific gravity of strata of water differently charged with salt. To the curious question regarding the origin of this saline matter, amounting to three and a half per cent. in the average of all seas, he answers that it was thus when the ocean was created; that no washing down of salts by rivers can adequately explain the phenomenon; and that the "Christian man of science" may rest on the absence of any proof from Scripture or otherwise, that the sea waters were ever fresh. Even accepting the conclusion as probable, we must repeat our remonstrance against this mode of stating it. The question in itself is one of much difficulty, and we can see no evidence that it is ever likely to go beyond presumption. The uniformity in the quantity, quality, and proportion of the saline constituents, and fossil animal remains of ancient *salt seas*, now found many thousand feet above the ocean surface, would seem the strongest proofs of identity of state from the beginning. The presence, in all sea-water, though in most minute proportions, of those singular elements (or what are provisionally called such) iodine and bromine, becomes a special part of this argument, and can not be neglected. We do not yet venture to cite to the same effect the recent discovery of silver, as another ingredient; since further experiments are needed to attest its universality.\* But all these researches show the complex and wonderful nature of that ocean fluid which wraps round so large a part of the solid globe.

In treating of the various ocean temperature, and its influence in producing currents, we do not observe any notice of that singular and important discovery, which we owe to Sir James Ross, namely,

\* The discovery of silver in sea-water, by Malaguti and Durocher, is curiously confirmed by certain experiments by Mr. Field, showing the presence of silver, even to the amount of seven ounces to the ton, in the copper sheathing of ships long exposed to sea-water. These observations are related in a paper read to the Royal Society some months ago.

We may notice here the curious experiments of Professor Chapman, of Toronto, as to the comparative rate of evaporation from salt and fresh water. They show that the greater the proportion of salt, the slower the evaporation; and that water containing the same percentage as that of the sea, loses, in 24 hours, not quite half as much as fresh water. This fact gives some support to Mr. Chapman's theory, that one great use of the salt in the ocean is that of regulating and controlling the evaporation ever going on over its vast surface.

the existence of a stratum of *invariable temperature*, 39½° Fahrenheit, pervading the ocean from north to south, and represented on each side the equator by a similar and very curious curve, depending on the superficial heat or cold in different latitudes. At the equator the depth of this level of constant temperature is 7200 feet—in latitude 56° it is at the surface—in the Arctic regions it descends again to 4500 feet; the temperature in each case being invariably the same, that is 39½°, below the level of these several depths. The value of such observations to every theory of submarine currents will readily be perceived.

In a chapter on "Ocean Routes," Lieut. Maury gives some graphic narratives of that racing on the high seas, which, if it be the pride and profit of modern navigation, is also oftentimes to be accounted its folly and peril. The struggle for superiority, whether by sail or steam, is still almost exclusively between England and the posterity of England in America—the two great commercial communities of the world. Though the Indian and Pacific Oceans form part of the scene of contest, the Atlantic is the arena where science and skill, aided by abundant capital, and incited by emulation, have achieved results, which half, or even a quarter of a century ago would have been deemed impossible. These results are too well known to need relation here; but we may notice briefly one or two facts, illustrating and explaining the wonderful changes now in progress in commercial navigation. We should scarcely err in stating the average duration of long ocean voyages—as those to or from China, Australia and India, performed by the best sailing ships—at barely half what it was at the first period just named. Among the causes concerned in this great result must first be noted, the improved construction and fitting of ships, and more especially in regard to what Mr. Russell has called the *wave principle of construction*; or, in other words, the form of least resistance of a solid moving through water. Connected with this, and in practice now applied to the same end, is the direct relation ascertained to exist between the length of the vessel and the speed it is capable of attaining. But beyond these altered conditions of the vessel itself, comes in the enlarged and more exact knowledge of the seas it traverses; of the

winds and currents, the shoals and depths, and the various other physical phenomena of the ocean, which have been brought to the aid of practical navigation, and to which we have already so copiously referred. To the combination of these causes, and the record of the tracks and times of many hundred voyages, upon methods which Lieut. Maury has done much to enforce, we owe those feats of seamanship which have brought Australia within ten weeks of England, and made the circumnavigation of the globe as frequent and familiar as was once the passage across the Atlantic.

We have here been speaking of sailing vessels. Steam navigation has its own peculiar history, including not only these several improvements, but others also, which depend on more perfect machinery and a higher class of engineers. Though steam has now spread its dominion over the globe, the Atlantic is still the sea where it puts forth its greatest powers. The several lines of mail steamers across this ocean, and more especially those familiarly known as the Cunard and Collins lines, have reached a degree of speed and regularity, which it would be hazardous to say may not hereafter be surpassed, but which will be a monument and mark of human progress, in applying the physical elements to the uses and demands of man. It is no serious disparagement to the second of these lines, to say that it has lost the superiority for a short time gained in speed over the Cunard line of English steamers. According to an American statement now before us, we find that, during the last year, the average of twenty-five passages from Liverpool to New York, by the American steamers, was 12 days 16½ hours—by the English steamers, 11 days 22 hours; of passages from New York to Liverpool, by the American vessels, 12 days 8 hours—by the English, 11 days 3 hours. Many circumstances concur to this result; chiefly, perhaps, the consummate discipline of the English vessels in their every department of service. But the rivalry we regard as an honorable one, and it may yet be maintained, advantageously to the interest of both nations.

It is not, however, a rivalry without risk. In seeking for the maximum of speed, safety is jeopardized in all these great lines of mail steamers. Winter storms, icebergs, fogs, tropical hurricanes,

and collisions with other vessels, are all encountered at high rates of velocity. Experience and discipline have done much to protect against these dangers, but serious hazards still exist; and especially those of collision, which are constantly augmenting in an ocean every year more crowded with ships, seeking to find the shortest passage across it. In these days, however, of bold design and prompt execution, there are few ills which do not bring with them the suggestion of remedy. Lieut. Maury, and others in sequel to him, have urged the adoption of "*steam lanes*" across the Atlantic; that is, definite lines of navigation of a certain width, and distinct from others throughout; so appropriated severally to vessels going east or west, that the chances of collision may be greatly lessened, if not actually removed. The width of the zone of ocean now traversed by the mail steamers is about 250 miles. It is proposed to mark off *lanes*, 20 or 25 miles in width, on the northern and southern borders of this zone, as the routes respectively to be followed and adhered to, by all steam vessels crossing in one direction or the other. The scheme, or some one equivalent to it, we doubt not to be practicable; and such is its obvious utility, that we as little doubt its being eventually carried into effect. The phrase of a *steam lane* may somewhat startle those who are wont to associate with this word the cross roads of a midland rural district—the high hedges, deep ditches, and straggling cart ruts; the bushes of blackberry, hazel-nut and hawthorn, and the hundred sweet flowers and weeds which luxuriate on the hedge-banks. We can not quarrel, however, with this new use of the term, if the object be fulfilled to which it is applied—if *long lanes* of ocean, "which have no turning," be really laid out for the safer navigation of the seas. The very simplicity and familiarity of the name is a tribute to that prowess of man which has taught him thus to mark out and pursue a fixed path through the wide wilderness of waters.

Though not having exhausted the subject of the Atlantic, either in its physical features, or in its relations to human industry and power, we stop here, only to refer our readers to Lieut. Maury's own observations on these subjects. The points we have touched upon will show how co-



pious and interesting a topic, under both these aspects, is the "Physical Geography of the Sea;" and how worthy to be embodied with the other great natural sciences, which at this time enlighten and animate the world. Every year enlarges

its domain; and we may fairly predict that the history of the Atlantic, written twenty years hence, will be a record of numerous physical facts, now either wholly unknown, or dimly and doubtfully understood.

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From the Westminster Review.

## CHINA AND THE CHINESE.\*

THAT fact is often more incredible than fiction, is a remark that time frequently endorses. Were it gravely stated in a romance that one of the most powerful nations in the world was affected in its government, its opinions, and even its feelings, by a kingdom removed from it by the diameter of the globe, that events occurring in a single city of that kingdom vibrated through every corner of Britain, exasperated parties, and divided statesmen hitherto friendly to one another, we might concede to the novelist his privilege of invention, but might justly complain of his attachment to the marvelous.

Yet the fact is before us, authenticated by dispatches, supported by blue-books, debated in the legislature, and shortly to be discussed at the hustings. A dispute at Canton has suspended the public business of Great Britain and Ireland, and terminated unexpectedly the present session of Parliament. Commissioner Yeh has performed a feat which Lord Derby and his adherents have for three years been occasionally attempting; they have carried a vote of want of confidence against Ministers, and made it advisable for them to appeal to the sense or the passions of the country. "*Tantæ ne animis cœlesti-*

*bus iræ*:" what share have the inhabitants of the *celestial* kingdom in this commotion? Is it their strength, their duplicity, or their perversity which has thus imperiled, or, it may be, strengthened the hands of Lord Palmerston, and filled the columns of our journals with professions of self-devotion and zeal for the public interest?

Into the state of parties at home, the possible results of the approaching elections, and the chances of the present Ministry for a new lease of office, or a prompt dismissal from it, we do not propose to inquire. We leave these "*domestica facta*" for others to celebrate, and propose devoting a few minutes to the people who, directly or indirectly, has called from their hiding-places the banners, the colors, and the manifestoes of candidates, and will shortly inflict more noise and turmoil upon our capital and provincial towns than the Chinese themselves create with their periodical hubbub of gongs, tom-toms, and fire-works.

If we do look to the number of books which have been written about China since our permanent establishment at Canton, we have no reason to complain of the scantiness of our information. On the contrary, we feel the embarrassment arising from riches. But the *labor* and the *opus* are to construct from the materials in hand a clear and consistent picture of the

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\* Papers relating to the Proceedings of her Majesty's Naval Forces in Canton; with Appendix. Correspondence respecting Insults in China.

nation with whom we are now exchanging shots. The inquiry is by no means unimportant. We may be engaged in a duel with the city of Canton alone, or we may be drawn into collision with an empire more formidable than any we have hitherto encountered in the East. If the central government of China should ignore the acts of its pro-consul, the conflict will be a short one; but if it adopt his prejudices against the "outside barbarians," we may perhaps have begun a contest that will be costly in its process, however triumphant to ourselves in the end.

Nor are the revolutions of Asia by any means objects of indifference to England. We do not hold, with dreamers of the Coningsby school, that the fate of the civilized world has always been, and ever will be, determined from the land of the Orient, or that revolutions from that quarter may again renovate or destroy our systems of religion and society. Yet neither is it possible to deny the fact, with the pages of history before us, that the compact masses of eastern tribes have at many epochs affected powerfully the civilization of the West, or that it was a horde from Central Asia which consummated the ruin of the Roman empire. It may be well, accordingly, to consider the social and physical aspects of an empire on whose skirts we are at this moment at war, and the probability or improbability of its rising against us in mass, and, if not assailing our outposts, yet at least inflicting on our trade and progress in the East a blow which will be felt both in our colonies and at home.

In contemplating a country which we may be called upon to assail on some more vulnerable point than its extreme border, we must take into account all its resources of defense or aggression—its *climate*, since heat and cold are among the implements of war; its *wealth and population*, since these are the sinews of war; the *physical character* of the land, since mountains, and rivers, and plains are often the strongest bulwarks of a kingdom; and the degree and kind of its *civilization*, for this, more even than its numerical force, is often the measure of its resisting power. It may be useful also to inquire whether there be any element in the national character of the Chinese people likely to inspire them with the strength of enthusiasm or union, or whether the days of its

empire are numbered, and the epoch has arrived for breaking down its long isolation from the great human family.

Our survey of the Chinese empire must be brief, and accordingly we can afford to trace in the following sketch such features only as appear most important to our present inquiry. We shall presume, indeed, since the means of information are so abundant and easy of access, that our readers are in some measure acquainted with the subject, and shall attempt merely to generalize what is commonly known.

The *climate* of China may be described as one of *extremes*, and presents some curious anomalies. The general temperature of the country is very low for its geographical position. At Peking, which is one degree farther south than Naples, the mean temperature is nearly that of Brittany, and while the winters are as rigorous as those of Sweden, the summer heats are more intense than those of Cairo. But in a territory ranging from the twenty-sixth to the forty-second degree of north latitude, the variations of the climate are necessarily great. In the maritime provinces—and the sea-coast extends nearly 2500 miles—both heat and cold are much modified by the sea. At Canton, which is under the tropic, the heat during the months of July, August, and September is excessive, and is accompanied, at least in the neighborhood of the city, with frequent and destructive typhoons. At the close of the hot season, the transition to cold is sudden, and the entire province is overspread at night, for weeks together, with dense and chilling fogs. The climate of the interior is, however, generally exempt from the extremes of Canton and Peking. The province of *Kiang-se* is the most favored; but the central provinces generally enjoy a happy mean between the rigor of the north and the enervating heats of the south. In no one, indeed, of its numerous sections is the climate of China decidedly unhealthy or ill-suited to the development of vegetable or animal life. Even in the north, the summers are genial, and the winters, though cold, are dry. The least salutary portion of the country is in the western frontier districts of *Gun-nan* and *Sze-che-se*, and on this account they have probably been selected for penal settlements. The census of China exhibits a numerous population in every quarter of the empire; and accordingly we may gene-

rally ascribe to its climate the properties which conduce to the conservation and comfort of life. The *wealth and population* of China are difficult to ascertain accurately, since our accounts of them are often suspicious, and the standard of wealth is differently estimated by native and European economists. Many a retail shopkeeper in England enjoys or expends a larger annual income than a Chinese country gentleman; and many an English country gentleman could defray, without much inconvenience to himself, the annual expenditure of a dozen mandarins. But goods, rather than money, are the symbol of wealth or competence in the Middle Kingdom, and a proprietor of lands is opulent in proportion to the amount of grain and rice in his barns, and not of the money in his purse. There are indeed no large estates, since the lands of the father are divided, after his decease, equally among his sons; and if any one holds more land than he can cultivate conveniently, he lets it to another on the *métayer* principle, or on condition of receiving half the produce. The Government, in some measure, fare in this respect like its subjects. Consistently with the patriarchal system of the Chinese, the Emperor is the universal landlord, and takes the tithes or taxes of his vast estate. He receives them both in money and in kind; and he distributes them, in like manner, among his civil and military officials, signing for some of them a cheque on the treasury, for others an order for so many quarters of rice or grain.

The annual revenue paid into the imperial exchequer is £10,000,000; but this sum by no means represents the produce of the taxes, the excise, and customs; since at least two millions more are paid in kind, and the provincial governors deduct their departmental expenditure, and forward to the treasury only the balance remaining. The imperial treasury, before the close of the late war between England and China, contained perhaps one of the most curious collections of coins in the world. For the native wares of their country, the luxuries or the necessities of Europe, the Chinese venders were content to take any currency, provided it were in good silver; and there had gradually found its way to Peking, through the most devious channels, the specie of Venice and the Greek empire, the tokens of the Flemish and Hanse towns, shillings and angels

stamped with the effigies of our Edwards and Henrys, dollars which bore the castles of Castile, and crowns which may have paid the *mousquetaires* of the Bourbons. In fact, so small in value, or so debased a metal, are the native coins, that these solid pieces of the barbarians were hoarded as ingots by a succession of imperial chancellors. The wealth of China, therefore, as contained in a circulating medium, would give a very imperfect idea of the actual or comparative resources of the country. These must be sought in its universal industry and its minute agriculture. The sternest of our political economists has not a greater theoretical aversion for vagrants and beggars than John Chinaman has practically. Mendicants are usually found in the immediate vicinity of Buddhist temples; and the only endowed religion in China—the religion, however, of a sect, and not of the State—lies under the discredit of alone encouraging paupers in idleness. The orthodox Chinese are mostly in the condition, as to worldly goods, which the wise man aspired to when he prayed for “neither poverty nor riches.” He can not subsist without work, and there is no kind of work which he will not cheerfully undertake. And the opportunities for laboring with his hands or feet are indefinitely multiplied by the rudeness of his implements and machinery. He despises, and he has always despised, the substitutes of the “Western devils” for manual labor. When the Jesuit priests displayed to the Emperor some of the most delicate instruments of European art or science, his Celestial Majesty viewed them with open indifference and secret contempt, observing that they would amuse the inmates of his nursery. The Chinese, at no period of their history, have been enslaved by the bondage of *castes*, like the Hindoos or ancient Egyptians; yet they have suffered from many of the inconveniences of that institution. It was forbidden by law to the Egyptians to improve upon or depart from the pattern of the saws, hammers, and chisels of the craftsmen who wrought for Menes and Rameses, even though the handy Greeks exhibited before them, at Alexandria, their own lighter and more efficient tools. Custom in China has been nearly as prohibitory as law in Egypt, and the artisan performs the most delicate operations of weaving, upholstery, carving, and inlaying, with implements that an Eng-

lish carpenter or cobbler would disdain to use. The economy of labor is therefore almost unknown; and among its minute and manifold subdivision, every one finds his work and his wages. The pittance of a Dorsetshire laborer has become almost proverbial for its scantiness in England; but his weekly pay would seem a fortune to the Spanish peasant or olive-dresser. The miserable earnings of the English sempstresses have drawn to them the attention and indignation of the humane, although it might be a rash policy in the legislature to interfere between the employer and the employed; but the weekly pittance on which the Dorsetshire laborer and the London sempstress manage barely to exist, would keep a Chinese artisan for six months in rice, and even enable him to indulge in the occasional luxury of a rat or cat ragout. Acquiescence in low diet is usually and justly esteemed as a mark of low civilization: but the remark is not very pertinent to the Chinese, whose civilization, although comparatively with that of Europe imperfect, yet is advanced in comparison with that of Asiatics generally. They are, as a rule, a plump, unctuous, and muscular race, capable of enduring fatigue, and the *coolies* or goods-porters of the great towns especially are remarkable for their powers of lifting and carrying enormous burdens. Their strength is, in some measure, the reward of their ordinary temperance: for though in the purlieus of Canton the Europeans have corrupted them with alcohol and evil example, drunkenness is rarely seen in the interior. It is impossible not to see that among so many myriads of able-bodied men there is a vast "seminarium militum,"—a native *dépôt* of effective soldiers, should any emergency call for a *levée en masse*. The occupations of the artisan who is employed within doors, and restricted to a similar posture of the body during many hours of the day, are unfavorable to muscular strength and development, and the recruiting sergeant derives his supplies of "tall young men," not from the streets of Manchester or London, so much as from the athletic youth of the rural districts. The rule is indeed not without its exceptions, since few of our grenadiers are culled from Suffolk, but many from Lancashire. The army of the middle kingdom is dependent for its supplies neither upon the sedentary trades of the weaver and the tailor, nor upon the active occupations

of the plowman and the herdsman, since both the ordinary legions and the prætorian guards of the empire are levied from the resident or migratory Tartars. The land and water population, however, are qualified, both by their strength and stature, to become soldiers, at least as good as the sepoys of Hindostan; and the fields, rivers, and canals of China would afford an almost inexhaustible supply of recruits. Field-labor throughout the country is chiefly performed by the thews and sinews of man himself, for his plow would have been deemed antiquated by Cincinnatus, and his spade and hoe are ponderous and unwieldy. The works which he executes with these primitive implements are alike onerous and diversified; they tax his strength and try his patience. The land available for tillage in China bears a very small proportion to the area of the country itself. Much of it is extremely fertile, and much not naturally productive is rendered so by irrigation. But the mountains and hilly districts of China occupy about half of its extent: and although terraces of artificial soil are laboriously formed on the hill-sides, the flanks of the mountains are either sterile rocks or clothed with primeval forests. Even its enormous plains are by no means all pervious to the plow. The northern portion of the Great Plain—which, according to the census of 1813, feeds no fewer than 170,000,000 of "mouths," as the Chinese say, not inappositely—is dry and sandy; while, on the eastern side, where it borders on the sea, it is low, swampy, and studded with lakes. The waters indeed of China, as we shall presently see, abstract considerably from the land; and if they contribute largely to some species of the people's food, they diminish also its area for grain and legumes. The agriculture of China has been sometimes commended by foreigners, and is the theme of wonder and applause to native writers. In France it might pass muster; but an English or a Belgian farmer would vouchsafe small commendation to Chinese tillage. We have already spoken of the implements in husbandry: to their defects must be added a general scarcity of manure, and an obstinate adherence to the rules of sowing and planting that sufficed for the aborigines of the soil. The scarcity of manure proceeds from the absence of dairy and sheep-farms—for the Chinese, unctuous as they are in their diet—neither drink milk



nor eat butter or cheese. Their horses are small, and unimproved by foreign breeds: their sheep are lean, and derive a precarious subsistence from the casual herbage of the fallows or canal banks, and to employ artificial manure would be regarded by those sturdy protectionists as reproaching heaven. The bullock, useful for the plow, is the only animal that finds much favor with the bucolical class of the "flowery kingdom." The sight of a well-compounded dung-hill, so full of hope to the British farmer, is unknown to the Chinese hind: he goes forth into the highways and to the borders of canals with his sons and his slaves to pick up the offal which chance throws in his way: the trimmings of his hair and beard, and of those of his household, are added to the heap: he hoards the refuse and off-scouring of all things as a miser hoards his gold; and feeds his glebe with supplies which an English cottager would leave on the roadside. Water, indeed, is the principal manure employed by the Chinese; and since the rivers fortunately bring down a turbid mass of alluvial soil, the harvests generally correspond to the expectations of the husbandman.

The amount of the population of China has been differently stated in the course of the recent debates upon the Canton question, and a facetious contemporary has suggested that Mr. Gladstone and Mr. Cobden should be sent to the celestial kingdom, and not allowed to return before they had ascertained whether it amounted to two or to three hundred millions. The absence of these gentlemen might be indefinitely protracted, if their restoration to home depended upon their ability to confute or verify their respective assertions. The census in China is drawn up in obedience to a paternal mandate of the emperor, commanding his children well and truly to inform him of the number of free persons in their households. This mandate is dressed, in the first instance, to the chief mandarin of a province, and by him circulated, on a descending scale, through a long avenue of officials. But the national vanity of the Chinese people is said to interfere greatly with the accuracy of the returns. Sons, inasmuch as they remain always under the *patria potestas*, are valuable commodities in China, where Professor Malthus has not a single follower. The *pater familias* accordingly is rather apt to exaggerate than underrate

the number of his male olive-branches. Next, a village or township is justly vain of reporting to the father of all its superiority in population to the next hamlet, and thus is also under a temptation to make the most of its masculine contents. A district, a province—there being no capitation-tax in China—share in this patriarchal emulation; and the emperor, when the account is laid before him, perhaps rejoices in the appearance rather than the reality of his wealth in children. There can be no hesitation in estimating the population of China at between 200 and 300 millions; and in describing it, in spite of the practice of frequent child-murder, and of occasional dearth, as one of the most thickly-peopled regions of the globe. The government of a family, or a tribe, by the eldest representative of their original proprietor, is one of the earliest facts in history, and has been the occasional dream of the philosopher. That a few score of persons, whose avocations were those of herdsmen, and who had no fixed property in land, might harmoniously combine under a single chieftain, the priest of their simple worship, and the arbiter of their temporary disputes, can readily be conceived.

No political rivalry, no conflicting claims of property, beyond an occasional controversy about rights of pasturage or watering, could ruffle the surface of such a community. But from the moment when fields began to be divided by boundary-stones, or fenced cities to be built, the society of the desert became an impossibility, and more stringent rules of government were required to protect the weak, and keep the strong in awe. The household has been well defined by Aristotle as the germ of all political institutions; but it was, in his conception, their ultimate analysis, and not their proper condition. In the vast steppes of Asia the patriarchal form of society has subsisted the longest, because there the circumstances in which it began and flourished continued to exist. That the government of China was originally imported from the tribes on its north-western frontier, there seems no reason to doubt; and when we come to consider the cities, we shall see that they still reflect, in many particulars, their prototype—a Tartar camp. But the anomaly in China is, that that country alone has preserved, in form and pretensions, at least, the patriarchal

system, although for more than two thousand years its inhabitants have ceased to be herdsmen or shepherds, and developed an extremely artificial system both in social and political life. The fiction is ludicrously inconsistent with the facts of Chinese society. From the humblest head of a family to the emperor himself, the idea of the *patria potestas* universally prevails. The sons of the house are never emancipated; the *jus paternum* expires only with the patriarchal life. But the chief or head-borough of a village is also the reputed father of all its inhabitants; and he, in his turn, is *in loco filii* to the next officer of the district. The heads of the districts look up to the provincial governor as their father, the provincial governor to his mandarin, and the mandarins stand in the relation of eldest sons to the supreme father of the nation. Such is the theory—and as a theory it wears an aspect of proportion and benevolence which entitle it to the highest respect. But such is not the fact. Virtually, the father of two and a half or three hundred millions of men sits above them as a conqueror, is of foreign extraction, is guarded by aliens, and like the Cæsars of Rome and Byzantium, depends for his throne, and even his personal security, upon the awe which he inspires, upon the jealousies he fomented among his subjects, upon the activity of his spies, upon the force of habit, upon nearly every motive except that of filial or paternal love. Perhaps the system of government under which China has subsisted, and indeed flourished, is the most astounding monument of conscious duplicity on record. It by no means follows that if the rebellion which so recently raged, and perhaps still rages in its interior, be finally triumphant, and terminate in the restoration of a native dynasty, the patriarchal theory will be abolished. Exempt as China has been from foreign invasion, except by the kindred tribes of Central Asia, it has been frequently the arena of sanguinary civil wars. On its plains have been again and again acted tragedies of as deep a dye as the wars which destroyed the empire of Charlemagne, as the civil furies of the Jacquerie and the Anabaptists, or as the struggles which during thirty years tore in pieces the old German empire. But whether the Mongols or the Manchous established themselves at Nan-king, or whether native pretenders ascended the vacant

throne, the reigning emperor of China has uniformly assigned the benign attributes of a father, and governed his people as an Arab Shiek governs his tribe. There seems, indeed, to have been, in all ages, a remarkable energy in the native Chinese character, enabling it to overcome its conquerors, and to compel or persuade them to adopt its own maxims and prejudices. The isolation and arrogance of the Chinese people are perhaps the results of its success in thus "taming the proud." Situated at nearly the eastern extremity of the old continent, it has always been inviolate by sea, and sundered by chains of mountains and inhospitable wastes from the civilized races of India and the West. They have, in fact, had no standard by which to measure themselves. They have invariably tamed the strong by their superior civilization; the rumors of the civilized West, which reached them through travelers like the Venetian, Marco Polo, or the Jesuit missionaries of later date, would inspire them with more contempt than respect for what they heard of distant lands. The little republics of Italy, which the Venetian envoy might describe to their learned men, would appear to them in the light of petty towns, of little more consequence than the lesser cities that lined the banks of the Yellow River; and the might of France and Spain, which the Jesuit missionaries might recount to them, would confirm their self-exaltation, since their armies were the more numerous, their advance in the arts at least equal, and the area of their land would contain both of these vaunted kingdoms, and leave room and verge to spare. From the complacency with which they regarded themselves, as well as the contempt or incuriosity with which they listened to the accounts of things unseen, the Chinese imbibed the obstinate conservatism of their character. A great and an understanding people, they argued, were our ancestors. They won the good land which we inhabit; they purged it of wild beasts, and drained off its superfluous waters; they planted the wilderness with corn; they lined the rivers with chains of flourishing cities; and they invented, centuries ago, arts of which the barbarians are only now becoming cognizant. The maxims by which they ruled themselves we will abide by; they have made, and they will keep us, powerful and prosperous. Surely we shall do well to depart from

them neither to the right hand nor to the left.

Externally contemplated, the administrative system of China is entitled to high respect, and is indeed as laudable and specious as any system of pure centralization can be. Neither is it any demerit that public opinion is entirely excluded from it, since the interference or even the existence of public opinion is an idea alien from the Asiatic mind. If the emperor be a *roi fainéant*, his indolence or imbecility is never permitted to transpire, for a mayor of the palace or a regency would be equally shocking and incomprehensible to his *filial* subjects. Deception, however, is easy, since the father of his people is impenetrably veiled from their sight; or, if revealed to them on some solemn festival, is beheld from such a distance and with such awe as effectually to disguise his lineaments. From him radiate power, honor, and instruction; and to him return obedience, homage, and information. In theory, the emperor is accessible to the petition of the meanest of his subjects; for as he is assumed to be the universal redresser of wrongs, it is needful he should be made acquainted with every grievance. In theory also, as he is the fountain of wisdom, he must be preëminent in knowledge; his daily studies are in the books of the learned, and the words of his lips are reputed to be taken down by his attendants, and stored up for the instruction of his successors. As the patron of the useful arts, he is supposed to be versed in the crafts and mysteries of his subjects; and as the tillage of the ground is, in Chinese conceptions, the queen of the arts, the emperor annually inaugurates the seed-time of the year by opening the first furrow. He is, moreover, chief priest as well as king; and while he tolerates the sectaries of Buddh, or smiles at the superstition of the multitude, he is the only mediator between earth and heaven whom the state recognizes. With all these attributes, he is not beyond the voice of admonition or reproof. A board of censors is selected from the gravest men of his kingdom to watch his actions and demeanor; and when these deviate from the rules of the sacred books, or the practice of his imperial ancestors, it is the bounden duty of his monitors, even if it be at peril of their lives, to reprehend his errors. The office of censor has not always been a sinecure. We read of one emperor re-

buked for sorting with players, another for his intemperate habits, a third for his predilection for the company of foreigners, and several for aspiring to be more wise than their forefathers. A pattern emperor, who gives no handle to rebuke, has no easy life of it; he must live by rule, must never act without a precedent; at certain hours be grave, at certain hours merry; and, in short, entirely forego his volition in order that he may infringe upon no one of the recorded or accredited practices of the ancients.

Some of the inconveniences of eastern despotism have been avoided by the sagacity of those who planned the monarchical system of China. There is no hereditary succession to the throne, but the emperor chooses one among the members of the royal house to fill his place when he abdicates or dies. The choice of a successor has generally been creditable to the chooser; and if now and then honors have changed manners, yet, unless flattery has obscured their actions, the proportion of good emperors has predominated. Generally, however, the direct and collateral scions of the imperial houses are a rude and worthless set, whom it is often expedient to disperse and ventilate in the frontier provinces, or even seclude for a term of years, or for life, from the court. Occasionally we find the Tartar colonels investing a member of the royal family with the yellow robe, as the Prætorians of Rome arrayed a Cæsar with the purple. But these deviations from the ordinary mode of appointment are rare; nor has the Chinese court, though by no means unstained with crime, ever presented such bloody scenes as have so frequently disgraced the Mohammedan seraglios at Bagdad, Ispahan, or Constantinople.

It was the boast, and not altogether an empty one, of the first French revolutionists, that they abolished the aristocracy of rank, and substituted for it the aristocracy of talents. In so doing, however, they merely introduced into Europe the long-established practice of China. It is, perhaps, essential to the complete isolation of a paternal despotism that it alone shall be exalted, and all beneath it depressed to a common level. Whatever may have been the cause of a practice so specious in seeming, the effect of it has been for many centuries to secure for the state the services of the ablest and most learned persons in the realm. Indeed, but for such ave-

nues to preferment, the *litterati* of China would either be few in number, or puzzled for their livelihood. There are no barristers and no clergymen, and the medical profession has never been in much repute. A government, however, which manages all the affairs of its subjects, has occasion for an immense staff of *employés*; and numerous as the learned class has ever been in China, it has seldom been neglected or starved. Education is common, and cheap; books are plentiful, and easily obtained; and as every student may present himself for examination in the Civil Service Department with the certainty, if he be not plucked, of getting some post or other, no one can reasonably complain of the hardships of the scholar's life. "The outside barbarians" are indeed only now taking a leaf out of Chinese books in their competitive examinations for public employments. From the learned class, and from such members of it as have highly distinguished themselves at the examinations, the Minister of Justice, Finance, Police, and Public Instruction are selected; nor is any preference displayed for birth or rank, even though the blood of Confucius flow in a candidate's veins.

The order and constitution of the various governmental boards imply a well organized system of administration, by which the privileges of the ruler are secured, while the claims of the people are not overlooked. The supreme direction of affairs is intrusted to what may be termed the Cabinet of Peking. It is designated the "Inner Court," and forms the Cabinet Council, the members of which are the *Ta-hyo-si*, or ministers of state. The Privy Council, like that of England, is never assembled except on very urgent occasions. It consists of the members of the "Inner Court," and the presidents of the Supreme Tribunals, with their assessors and secretaries. The Supreme Tribunals are six in number: 1. *Li-pu*, the Board of Ranks and Dignities—the Herald's College taking precedence in China, where politeness is an art, and precedence a grave consideration, over every other department of government. 2. *Hu-pu*, the Board of Revenue. 3. *Li-pu*, the Board of Forms and Ceremonies—not less important or less occupied, in a nation so formal and ceremonious as the Chinese, than the Home Office in Downing-street. 4. *Hing-pu*, the Board of Penal Law. 5. *Kong-pu*, the Board of Public Work. The Sinen-

sian Sir Benjamin Hall has no sinecure, for the roads and canals, *i.e.*, a fifth of the area of the empire, come within his department, not to speak of the imperial "woods and forests," and some hundreds of fortified towns. 6. *Ping-pu*, the Military Board, for which Commissioner Bowring seems likely to cut out some extra work.

Our limits forbid us to enter more at length upon the particular functions of these boards, and we must pass on to some general remarks upon the character of Chinese administration. Much looks well on paper, which in practice works wretchedly; and fair as is the aspect of centralization, in substance it is often the most grinding of tyrannies. "Let a man," says Sir Edward Coke, "consider the office of Justice of the Peace, and the world hath not wherewith to compare with it in dignity." Nevertheless, in practice, a Justice of the Peace is often, as is noted in "Hudibras," "an owl," and commits himself in signing the commitment of others. This deeply-organized system is not trusted by its employers. *Divide et impera* is a maxim of government as familiar to the Chinese as it was to the Roman Cæsars. In the higher departments, power is divided equally between the ruling Tartars and the subjugated Chinese. Each of the administrative bodies is made a check upon the other, and all are subject to the open or secret supervision of censors, who address their reports directly to the emperor. The same principle of division extends to the inferior offices in the capital, and to the provinces. Each province has its *Tsong-to*, or Viceroy, and its *San-fa*, or Governor, who are equal in authority, though not in rank, since precedence is always accorded to the Tartars. In all differences, appeal must be made to Cæsar alone; and his imperial mind is accordingly the general depository of the fears and jealousies of his deputies and representatives.

It might be thought, indeed, that Jeremy Bentham derived his idea of a panopticon prison from the theoretical position of the Chinese autocrat. In Bentham's penitentiaries, some one man was to be so placed as to discern from a center, whence every cell radiated, the occupations and even the countenances of all the prisoners. The "sun of heaven" is in like manner supposed able to discern whatever is



passing in any part of his vast dominions. In theory he reads every petition, and examines every report; in theory he returns the answer, and supplies the marginal correction. In theory, also, he is the Grand Inquisitor of the kingdom, the Head of the Police, the Master of the Ceremonies, the Chancellor of the Exchequer, and the Lord Chief Justice, since he is supposed—*ingunt simul creduntque*—to inspect the journals of every one of his administrative boards. The circumstances of his position recommend to the Chinese emperor the jealous policy of Tiberius. Every three years he changes the posts of all his officers of state, summons them to his presence at the commencement and the close of their appointment, detains their sons as hostages in their absence, requires from them a true and faithful account of their administration, and surrounds them with spies so long as they are in office. These endless precautions are indeed a corollary from the patriarchal form of government. Sufficient for a tribe, it is not extensive enough for a province, much less for an empire; and the shortness of the royal arms is supplied by a complicated machinery of check and counter-check.

We have now rapidly glanced at the agricultural population, the learned class, and the administrative system of the Chinese empire: but our review of its industrial resources would be incomplete without a survey of its rivers, its canals, and the myriads who occupy their business beside those inland waters. To her rivers, China is chiefly indebted for her vast population and general fertility. Among a number of important streams, some of which exhaust themselves in vast lakes, while others flow onward to the sea, the "Yellow River" (*Hoang-ho*) and the "Son of the Ocean" (*Yang-tse-kiang*) bear preëminence. These two magnificent streams, whose rise and destination are nearly similar, descend rapidly from the great table-land of Asia, are presently forced by the mountain-ranges to describe two immense and opposite semicircles, are separated at one point of their course by an interval of 1100 miles, and appear destined to lose themselves respectively, the latter in the tropical seas, the former in the icy deserts of Mongolia. But suddenly recalled, as if by an irresistible remembrance of their original brotherhood, from their wide gyrations, they converge from

the north and south, and terminate their long wanderings in the Eastern Sea, only 110 miles apart from each other. These, its natural arteries, aided as they are by innumerable tributaries and satellites, would alone confer upon China an almost unrivaled chain of water-communication. But the hand of man has seconded the bounty of nature, and connected by a network of canals the rivers and their feeders. In this respect, nor "Babylon," with its artificial rivulets, nor "great Al-Cairo," with its Nile-sluiques, is worthy to compete with China. The greatest of these canals, including its bends and elbows, is more than 720 miles in length. For the first three hundred miles, it flows through a level waste, which presents few obstacles to the engineer; but as it approaches, and after it proceeds northward of Nan-kin, it pierces hills, it is borne over undulating plains upon substructions of earth and brickwork, it passes through a chain of lakes, and intersects innumerable rivulets. Its original purpose was to connect the "Son of the Ocean" with the "Yellow River," but as the empire extended its limits, it became necessary to elongate the great connecting link of its provinces. In contemplating this artificial highway, it is hardly possible to avoid comparison of it with the great roads which, under the Cæsars, ran almost in a straight line from Syene in the south of Egypt, and York in the north of Britannia Romana, to the Milliarium in the Forum, grasping, as it were, in one wide embrace, the Celts of Thule and the "dusk faces" of "Nilotic Merce."

Nor needs China to shrink from the comparison, although hitherto her "Regina viarum" has remained uncelebrated. Apart from the engineering difficulties that have been surmounted in their construction, her canals are a proud monument of useful as well as arduous toil. They convey the produce of the empire from one province to another; redeem from absolute or partial sterility many hundred thousand acres of productive soil; connect her present remote capital with the very heart of the realm; afford employment to a dense population; and transport swiftly and economically the heralds or the troops of the central government. Nor, although their course is generally uniform, is the spectacle from their banks void of interest, or even, at times, of picturesque beauty.

"At certain periods of the year all Egypt is on the water," is the remark of a historian, who had just witnessed the great Saitic festival of Isis. Had he visited China, Herodotus might have said that many hundred thousand of its inhabitants rarely set foot on dry land. The amount of river-craft employed by the government alone, in the collection of taxes in kind, is enormous. Ten thousand imperial barges ply up and down the imperial canal and its lateral branches, receiving and depositing in the public granaries the rice and grain due to the exchequer. The salt-trade, a government monopoly, requires nearly as many; a vast number is also occupied in conveying from one place to another the copper currency, as well as the lighter or more luxurious articles of commerce which pay tithes—cotton, silks, etc., raw and manufactured. A boat in China, as in some parts of Holland, is frequently the house of the family, in which its members are born, brought up, arrive at man's estate, marry, and die in old age. An infinite number of trades is carried on in these floating workshops; and in ascending or descending the rivers and canals, it is no unusual thing to meet the blacksmith's forge and the carpenter's yard amid a flotilla of fishermen, fowlers, and washermen. This water-population is, indeed, among the causes of the general indisposition of the Chinese, until a comparatively recent period, to emigrate. The habitable area of the country is nearly doubled; the land not overburthened by occupants is left free for tillage, and some of the inconveniences of a dense population are avoided by the facility of moving easily from place to place. The occupations of the fishermen and fowlers of China, as well as of the numerous class which attends the droves or flocks of domestic water-fowl for the market, are described in the most trivial works on China; but the attraction of its towns and cities to the banks of its canals and rivers has not been so generally noticed. Toward the central parts of the country, near the points where the *Hoang-ho* and the *Yang-tse-kiang* intersect the great canal, the shores on either side are covered, as far as the eye can reach, with cities, towns, and villages, which, from a little distance, seem to form one uninterrupted avenue of streets. The picturesque character of the scene is enhanced by the vast number of light stone bridges, of one, two,

or three arches; and on certain festivals of the year these long vistas of buildings, brilliantly illuminated, cast upon the intervening waters the varied hues of myriads of colored lanterns.

As seen from without, the aspect of a Chinese city, although strange or grotesque to European eyes, is by no means unpicturesque; since the inhabitants delight in brightly-painted houses, and the forms of their domestic architecture are not ungraceful. Within the gates, however, three of the senses are offended—by the disorder and often the dilapidation of the houses and thoroughfares, by the incessant and discordant din of the multitude, and by the universal filth and evil smells. The original type of a Chinese city was the nomad camp of their ancestors, and to this day the great cities—Pekin, Nankin, and Canton—reflect the image of an extemporary encampment. The houses are low, with carved, overhanging roofs; no chimneys or mansions of three or four stories high break the monotonous line of the streets; while from nearly every dwelling, as from the booths in a fair, protrude poles, flags, and gayly-colored streamers or placards. The eye is pained and bewildered by the glare of the gilding, the varnish, and the painting of the shop-fronts; by the bright colors of the lanterns of horn, muslin, silk, and paper, that adorn the houses or span the streets; and by the numberless pictorial inscriptions which, parading the articles on sale, assure the passengers that "we don't cheat here." The ear is equally tortured and confused by the universal hubbub that prevails "from morn to dewy eve;" by the indescribable noise of tinkers, cobblers, and blacksmiths, plying their several trades in little portable shops, and proclaiming shrilly (for the Chinese, not less than the Arabs, are *peuple criard*) their superior skill and their low charges. Buying, selling, and bartering, are all and each conducted in soprano tones; and the *sotto voce* composure of customer and shopman across an English counter would seem to a Chinese tradesman utterly unbusiness-like. In joy or in sorrow they are equally clamorous. Nothing is so noisy as a wedding, unless it be a funeral; and it is hard to say whether carrying home a bride or a corpse causes the greater turmoil or obstruction in the streets. The Chinese policemen are not deficient in vigilance, and the prompt

punishments which the sitting magistrates inflict is of a kind seldom received in silence. But neither the officers nor the ministers of justice are potent enough to clear the streets, or to impose even momentary calm on the passengers. A dead lock, indeed, is often more than a daily occurrence. A string of camels encounters a drove of heavily-laden bullock-wains, or a line of mules bending under pack-saddles. At the same instant there is a shout of "room" for a magistrate and his lictors, not unattended with the crackling of whips and a hail of bamboos. A funeral and a marriage procession have got mixed together, and the squalling music of the bridal party is not inappropriately accompanied by the dismal howling of the mourners. Jugglers, conjurors, mountebanks, quack-doctors, musicians, and players, all contribute their several quotas to a Babel which might justify a second dispersion of mankind; and in the midst of this wilderness of discord is constantly heard the twanging noise of the barber's tweezers, like the jarring sound of a cracked Jew's-harp. It is fortunate for the senses of the inhabitants that the setting sun terminates this chaos. The Chinese are not minions of the moon. "Tired nature's sweet restorer" is duly appreciated by them; and as soon as the evening shades prevail, the silence of the streets is broken only by the tramp of watchmen, or the howling of importunate dogs.

The strength of the Chinese empire consist in the ability of its people to labor, in their industrial habits, and their aptitude for organization; and we might, perhaps, altogether omit from our survey a notice of its military and naval forces. In regular warfare we have probably little or nothing to apprehend from any forces which they can at present bring against us, either on the land or on the ocean; yet it must not be forgotten that, although undisciplined and ill-armed, they are not deficient in personal courage; that they are blindly attached to their own country and institutions; that, in case of a general war, they will be contending on their own soil, and with the zeal inspired by their fanatical hatred of strangers, against a handful of enemies; and that their reserves of men and magazines will be out of all proportion to our numbers or resources. Because a speedy termination of our present quarrel is probable, it should not be

overlooked that a tedious and obstinate war is not impossible. Neither have we any right to account among our advantages the accidental circumstance that at this moment China is an empire divided against itself. It is one thing to have taken up arms against a reigning dynasty: but it does not follow that the rebels will therefore be our allies. The doom of the Greek empire was more than once averted by the returning loyalty of the provincials on the approach of a common enemy; and though the prefectures of Thrace and Illyrium resisted the imperial rescripts, and even profaned by defeats the majesty of the Comneni, they rallied around their emperor as soon as the crescent actually menaced the safety of the cross. Whatever may be the present weakness of China, it has not yet arrived at the final estate of the Greek empire. The obedience of some of its provinces may be suspended for a while, but they have not been violently torn from it, and apportioned among aliens. The Tartar dynasty may be approaching its dissolution, but the integrity of the Chinese empire, as regards adverse possession against foreigners, remains intact. We are too imperfectly informed of the causes of the Chinese rebellion to pronounce a judgment upon its origin, or to speculate upon its issue. But whatever these may have been—whether one of the religious movements which at certain eras have shaken the thrones of the East, or mere impatience of misgovernment, or a revival of loyalty to the race of Ming—there is no symptom that either the Chinese people are more ready than formerly to amalgamate with strangers, or instigated to rebel by any leaven of discontent infused into them by Christian missionaries. If the rebels, indeed, as has been sometimes surmised, have attained to a dim knowledge of the faith of the West, they more probably regard it as an auxiliary to their own sacred books than as a motive for raising the banner of Christ against the orthodox followers of Confucius.

Sir Dugald Dalgetty, who was so scandalized by the bows and arrows of the Children of the Mist among the civilized weapons of Montrose's host, would have been still more shocked by the appearance of a Chinese army. The matchlocks now in use among them are the old Portuguese matchlock of the sixteenth century, which bears about the same relation to our "old

Brown Bess" that "Brown Bess" bears to the Minié rifle. The Tartars, mostly cavalry, are soldiers by profession. Their arms are bows and broad scimitars; and in comparison with the cumbrous and uncertain matchlock, the bow is not to be despised. The scimitar is worn on the left side, like a gentlemanly and christian sword; but it does not, like that appendage, dangle at the hams of its wearer; neither is it ever carried jauntily upon his arm, but protrudes forward shockingly, and is drawn by carrying the right hand behind the back; for the prudent Tartar is of opinion that to draw it from the front of his body would expose his arm to an adversary. Of these Tartar forces, which are the *élite* of the Chinese army, there are eight brigades, or "banners." The native soldiers are for the most part a militia, who performed many of the functions of a *garde civique*; and as they are permitted to follow their peaceful avocations during at least two thirds of the year, they possess about as military an aspect as citizen soldiers usually wear. Their ordinary employments are, to guard the city gates, to carry Government expresses, to act as custom-house officers at the military stations along the roads, rivers, and canals; and to aid the civil magistracy as policemen. In dress and appearance they resemble the valiant supernumeraries who represent in provincial theaters the armies of Richard or Rolla. Their helmets are made of paper; their boots of a coarse satin; and their uniform consists of a wadded gown and a quilted petticoat. Instead of a military salute, they acknowledge the presence of an officer by falling on their knees; and in warm weather they ply their fans as assiduously as any dowager duchess in an opera-box in July. The Government has occasionally betrayed misgivings of the effect of these military phenomena upon barbarians. There was great anxiety that Lord Amherst should report favorably to Britannic Majesty of the martial bearing of the "celestial host." "Through the whole route," proclaimed an imperial rescript, "take care that the soldiers have their armor fresh and shining, and their weapons disposed in a commanding style, and their attitude be dignified and formidable." The authorities, however, can not be accused of indifference to the feelings of the soldiers, at least if they have the luck to fall in battle. The body of

an officer is burnt, and his ashes, with his armor, and a pompous eulogy, are sent to his friends; the bow and sword of a common soldier are transmitted to his family; rewards are distributed; and honorable mention of the deceased made in the *Pekin Gazette*.

The numerical force of the military and naval establishment of China is, like its population, enormous, since all males are enrolled for service at a certain age. This levy *en masse*, indeed, is rarely, if ever, called for; and extraordinary contingencies, such as insurrection in the provinces; or the suppression of bands of robbers, are met by extraordinary levies in the immediate or adjoining districts. The present rebellion has summoned more men into the field than any former period of the reigning dynasty; yet, on the other hand, the imperial army has been greatly thinned by desertion to the banners of the insurgents. With that care for family life which distinguishes the Government, many exemptions are granted from military service. An only son, or a son who supports his infirm parents, are both exempt; and the *jus liberum* also prevails, since the father of a numerous family of sons is deemed to have discharged his share of duty to the commonwealth. In a country where the means of living are cheap and abundant, and the simple accouterments of war are those of home fabric, and of an ordinary kind, the cost of arming and maintaining a numerous militia is comparatively slight; and without seriously taxing his finances, the emperor can bring into the field a host at least as numerous as the kingdoms of France and Prussia united. But number would be the only point of resemblance, since, in action, a few European regiments would be able to discomfit the largest array of the celestial empire.

To an invader from Europe, the naval force of China is less formidable even than its army. In nothing, indeed, has the conservative spirit of the people displayed itself more strikingly than in its naval architecture. With a coast extending nearly 2500 miles—with a few capacious and, with the aid of art, almost impregnable, harbors—and with an unsurpassed inland water-communication, the Chinese have made little or no progress in navigation since the fourteenth century. Five hundred years after Marco Polo described their marine, Lord Macartney saw in their ports the very same kind of awkward, an



tiquated, and unwieldy vessels; and the accounts of recent travelers confirm the description of Lord Macartney. Their anchors are still of wood; their ropes and sails of bamboo; and law or unalterable prejudice still prescribes the form of the stern and the rudder, and the number of compartments in the hold. Their military navy is indeed unworthy of the name; it is a mere flotilla, whose principal occupation is that of transports for soldiers, or revenue-cutters—and the Admiralty at Peking has frequently been brought to the disgraceful necessity of taking into its pay a few serviceable pirate schooners, or submit to the blockading and pillage of its own harbors. The boats and barges built for internal commerce are, however, although sufficiently antiquated and heavy sailers, commodious when compared with the Government navy. Their form is also in some measure attributable to the purposes which they serve, and to the peculiar waters on which they ply. For, inasmuch as a barge is often a dwelling-house, its deck and hold must be adapted to the purposes of housekeeping, and contain a kitchen and numerous sleeping apartments, besides coops for poultry and pens for cattle. The passage-boats on the Grand Canal afford the best specimens of Chinese naval architecture: and these are built after a pattern suited to the depth and velocity of the stream, and the width of the locks and flood-gates that regulate its level. As the activity and material wealth of China are most advantageously seen at the point where its two great rivers intersect the canal, so this is also the most favorable point from whence to contemplate its large, and small, and infinitely-varied river-craft. For here may be seen, in motion, or at rest upon the waters, a forest of masts and an almost inextricable maze of vessels, from the imperial junk to the tiny pleasure-boat, gliding with the stream, or working up against it by oars, sails, and wheels, adorned with grotesque effigies of dragons, lions, and heraldic monsters, and decorated with the profusion of gilding and bright paint so dear to the eyes of every born Cathaian. As this point of intersection, where the multitudes of river-loving China most do congregate, is by no means inaccessible to English steamers, we suspect that an English Plenipotentiary, who should present his credentials there, backed by a few gun-boats and a reserve in the offing

of a man-of-war or two, would have a much better chance of obtaining a soft answer and substantial concession from the Government, than if he wend his way to Peking, and demand a conference with the "Yellow King."

A land so permeated by navigable waters may be not difficult to assail, but it is also proportionally easy to defend. Across every canal, every river and its tributaries, a boom, a chain, or a strong breastwork of boats may be drawn, and a succession of tedious, if not very formidable, obstacles erected against an invader. But the impediments to be overcome would not always be such as may be directly confronted. The flanks and rear of an advancing armament would be incessantly harassed from every point where a cutting or a natural stream enters the great highway of the waters; and indifferently as Chinese naval gunnery may be, it is not quite innocuous, and would atone in some measure for defective skill by overwhelming numbers. It is possible, indeed, that the population of Canton may be peculiarly arrogant and averse to foreigners. But the whole mass of the nation is leavened with hatred and jealousy of strangers, and convinced that "the peculiar people," protected as it has been by the isolation of centuries, has nothing to gain, and much to lose from the advent and innovations of the outside barbarians. The very prejudices of the Chinese would render them capable of war to the knife.

The defenses of a country are natural or artificial; and China, in some degree, combines the physical advantages of a mountainous region with the native resources of a fen-land. In the long line of internal navigation between Canton and the capital, the traveler encounters every variety of surface disposed in vast homogeneous masses. For many days his course will be through an unbroken plain, stretching on all sides to the horizon, and diversified only by tall pagodas, or by the artificial mounds where the dead repose. For as many days he will be encircled by lofty and barren rocks, and descend through their passes upon lakes, swamps, and morasses. It is doubtful, so little is really known of the interior of this vast country, whether the population be equally diffused over its surface, or collected in masses around the great lines of communication between the south and north. The accounts of the Jesuit missionaries,

and of the Dutch envoy, Van Braam, are so dissimilar to each other that they might be supposed to relate to two opposite regions. The Dutch embassy set out in winter, when the canals were frozen, and it was necessary for them to be carried overland in small bamboo chairs. For eight or ten miles together there was no visible trace of culture, nor habitation of any kind. Huge shallow lagoons covered the greater part of the soil; until they had crossed the Yellow River, no tracks of wheel-carriages marked out the roads; the streams when not fordable were crossed on bamboo rafts; the few towns and villages which they passed were crumbling to decay; and an indigent and oppressed people possessed neither the means nor the wish to be hospitable. The Jesuits saw the land at a more favorable season, or visited happier districts of it. They describe the dry plains of Petcheli and Shantung as abounding with cotton, and many kinds of grain and pulse; the more varied surface of Kiang-nan as fertile in wheat and millet, in the yellow cotton-plant and mulberry-trees, and yielding abundant supplies of the luxuries as well as the necessaries of life. Even the swamps and morasses sustained a numerous population of fowls and fishermen; while the porcelain manufactories of Kiand-see attracted as much busy life as the English potteries. A redundant population was an universal feature of these diversified scenes. Had an ancient traveler passed cursorily through them, he would probably have imagined himself in the land of the Amazons, since, although he would have beheld thousands of men, and hardly one woman, the long gowns and petticoats of the masculine gender might have been easily mistaken by him for the habiliments of the opposite sex.

Such a country is easily defended, provided the inhabitants of it be averse from change and well-affected towards their rulers. Every mountain-pass, every dyke and morass, may be rendered a formidable barrier, and even winter and artificial dearth become auxiliaries against invasion. But, as the Tartar incursions have repeatedly proved, China can place little or no reliance in its military strength. Twice since the Christian era they have conquered the whole country, and changed the ruling dynasty. And, once conquered, it is easily retained, since it hardly possesses any fortress capable of protracting a war

or affording refuge to fugitives. From the Great Wall on the northern and north-western frontier to the mouth of the Bocca Tigris, near Canton, there is nothing that merits the name of a fortress. All the military architecture of China, indeed, is of one form. It consists of mounds of earth cased on each side with brick, and flanked with square towers at bowshot distance from one another, resembling closely the *vallum* with which the Romans at first defended their provinces on the banks of the Danube or the Rhine. The best defenses of China are its rugged mountains, its sandy deserts, and stormy seas; the power which it has, in common with Holland, of inundating its plains; the hostility of its people to strangers—with their congeners the Tartars they easily fraternized—and its remoteness from the civilized West.

There are many other aspects under which we should desire, if our limits permitted, to regard China, its people, and institutions. But we can now afford space only for two phases of them in which national character is usually most instructive and expressive—the earnest feelings which it embodies in religion, and the sportive feelings which it displays in its popular amusements. Under the head of religion, we shall include a glimpse at its philosophy; and under that of its amusements, the ceremonial usages that adorn or encumber its social life.

During the latter half of the eighteenth century, when the philosophers of France pervaded Europe with theories of government and social science, it was the fashion to appeal to the East for precedents in ethics and legislation, and to cite the precepts of Brahma and Confucius as oracles of wisdom. The writings of Chinese sages were liberally, though uncritically, cited by Helvetius and Montesquieu; the obscurity which then hung over the Middle Kingdom favored the exercise of fancy, and its civilization was magnified to the scale of a Utopia or an Atlantis. The frame-work of European society was then on the eve of a mighty change: wearied with their old and effete doctrines, secular or spiritual, men sought for examples of order and truth in regions remote from Christendom; and because, of all the civilized realms of the East, China was then the least accessible to Europeans, speculative and learned men invested it with attributes as extravagant as they were groundless.

These twilight fancies have disappeared before clearer and more authentic knowledge; and we now behold in China a region which, so far from outstripping other nations, has lagged behind them in the race of civilization. The two inventions which have most affected Europe—the discovery which, above all others, has extended our acquaintance with the globe, were known in China earlier than in Europe, yet *printing* has not awakened or guided among them public opinion; *gunpowder* has but slightly changed the character of their armies; and the *use of the compass* has neither made them skillful mariners, nor inspired them with the spirit of maritime adventure. The effects of a blind and obstinate conservatism are nowhere so palpable as among the Chinese. The general barriers which have in all ages severed the Eastern from the Western man are the power of the priesthood and the bondage of castes. Voluntarily or unconsciously, the votaries of Brahma surrendered their free will and action to those ancestral corporations which claimed to speak with the voice and to administer the mandates of Heaven. Before he came into it, the place of every man on earth was fixed by inscrutable decree; and since he had no power to raise above it, he had no motive for ambition or self-improvement. But these metaphysical restrictions have not pressed upon the Chinese. Castes have never existed among them, and the State religion at least has never been swayed or clogged by an established priesthood.

It does not enter into our present purpose to examine the creeds, or even the peculiar distinctions of the Chinese sects, but to confine ourselves to religion so far as it is a State machine. Religion in China stands apart from every known form of Oriental faith, inasmuch as it lays no claim to a Divine origin. Another peculiarity of it is—and in this respect, again, it differs from all other Eastern systems—that the civil and religious institutions of China are almost independent of each other. The State rarely, if ever, appeals to the authority of religion, and seems nearly to realize Bayle's famous, though almost now forgotten hypothesis, of the possibility of a commonwealth of atheists. Three sects are recognized as legitimate by the Government, but it gives preponderance to none of them. The faith professed by the learned may,

in some degree, indeed, be designated as the religion of the State, because from the learned class are taken the officials of the governing body. Moreover, of the three recognized sects, that of *Ju-kyao*, or the learned, is the most conservative, and accordingly most in unison with the national adherence to custom and precedent. Of the *Ju-kyao*, Confucius, who lived about four centuries and a half before the Christian era, is the reputed founder. The philosopher and his followers profess to retain unaltered the primitive faith and institutions of their forefathers. It is, however, a philosophic as much as a religious creed; its more abstruse doctrines are reserved for sages; while it condescends to provide for the vulgar a sufficient, and not altogether an unimaginative system of belief. Confucius, like Plato and the Sophists, believed the multitude incapable of enduring the exposition of mere truth. For the learned, therefore, he reserved the metaphysical enigmas of the eternity of matter, the indivisible and indestructible nature of the Creator, his effluences and emanations. To the vulgar, he conceded a mythology capable, as he deemed, of fixing in their minds, by means of visible objects of their symbols, general notions of good and evil, and of future responsibility. From the primitive religion which he proposed to revive, he derived the adoration of the earth and sky—the one as the common parent and nurse of man, the other as a visible emblem of the Supreme Being. To these simple personifications he added the genii or tutelary spirits of the soil, of grain, of the hills, rivers, forests, winds, and fire. The spirit of the ocean he typified by a dragon-king; his god *Terminus*, the Guardian of Borders, was a deified hero; the lights of the firmament were worshiped under the symbol of the Queen of Heaven; and articulate speech, which divides man from beasts, he commemorated under that of the Genius of Eloquence. The doctrines of Confucius, however, appeal less to the heart than the senses or understandings of their votaries, and demand rather a calm acquiescence than a lively or zealous faith.

For nearly five hundred years after the death of Confucius no innovations were made in his system, or in the earlier and more metaphysical doctrines of Lao-Tsé. In the latter half of the first century before the Christian era, a third sect

sprang up, which—a modification of Buddhism—is the religion of the present dynasty, but not, therefore, the religion of the State; for the Chinese Government, except for political motives, has never been guilty of intolerance—and though it has frequently punished schismatics with excessive and scandalous severity, they have suffered for their rebellion rather than their dissent. Religion, in the eyes of these politic statesmen, is not a divine law which it is the duty of every man to obey, but an engine of policy to be dexterously employed. The present rebellion is surmised to be the effect of the formation of a new religious element, and to derive its strength from the faith or fanaticism of the insurgents. But all accounts of it are so vague and contradictory, that we are quite unable to determine, at present, whether secular or spiritual discontent has raised the banner of revolt. The general latitudinarianism of the Chinese is, however, less doubtful; the indifference of the Government is partaken by the learned, and in some measure by the people also; and they look with equal apathy upon the asceticism of the priests and monks of Fo, and the exertions of the Christian missionaries in the work of conversion. A religious war, or even a partial outbreak of zeal, like that of the Iconoclasts of the Greek Empire, or the Anabaptists in the fifteenth century, is apparently not likely to accelerate the decline or fall of the Celestial Empire.

The philosophic indifference of the learned and the upper classes has not, however, checked the growth and practice of superstition among the people. Their credulity is unbounded; the objects of their fears and supplications are innumerable, and the ceremonies by which they hope to avert the wrath of evil spirits, or secure the favor of good ones, would amaze even a Neapolitan lazzarone. Evil spirits, not content with their own hideous forms, assume the shape of frogs, apes, or foxes, and plague their victims with ill-luck in their fields and shops, and with disease in their bodies. Luckily, the demons have a rooted dread of noise and incantations; and since the priests of China are the noisiest of ecclesiastics, and very ingenious in devising charms, they chant, howl, smoke, and drum away the foul fiend with very general success. Candles and strips of gilt paper are deemed pleas-

ing to the spirits of the woods and fields; and the plowman deducts from his scanty wages a portion in order that he may gratify these rural deities. The Chinese calendar is as well stocked as that of ancient Rome itself with *Dies Fasti et Nefasti*; and whereas we reckon it a wholesome practice to begin our work in the early morning, the Chinese account midnight the more auspicious season, because then, according to the Buddhists, the world was created. No prudent *pater familias* will hire or build a house until he has ascertained its aspect, as well as the aspect of its several rooms, and the ability of the dragon on its roof and the screens within doors to scare away evil spirits. Amid such a population, the astrologer drives a profitable trade; although these star-gazers are mostly blind musicians, in good correspondence with sharp-sighted Bonze-priests.

The moral character of a nation is a more profitable subject of inquiry than either its philosophy or superstitions, and on this head it is scarcely possible to decide between the disagreements of the doctors. We shall not attempt to reconcile them, but request our readers to "look on this picture and on this." Their enemies aver that for hypocrisy and pride, meanness and frivolity, cruelty and fraud, lying and sensuality, the Chinese have not their equals on earth. Their friends maintain them to be a lively, cheerful, and contented people, urbane in the highest degree, ready to oblige, and uniformly civil and respectful. The truth, as usual, lies between these extremes. Their vices may be traced to the baneful influence of a paternal Government, which allows of no liberty of speech or action, carries its system of espionage through every grade of society, and controls even demeanor by a strict code of etiquette. The ceremonial law of the Chinese is indeed ten times more burdensome than that of the Jews, exaggerated as it was by the traditions of the Pharisees. They are born, they live, and die under a system of perpetual coercion, and from their earliest infancy are taught to dissemble the buoyant spirits and lively emotions natural to youth. A Chinese boy is as priggish as a rigid Quaker; a Chinese youth is as grave and stately as a lord-in-waiting; and a Chinese man is better acquainted with the forms of address, congratulation, condolence, and farewell,



than all the court-chamberlains in Europe. There is no nearer road to systematic duplicity than unrelieved restraint; and since, owing to the predominance of etiquette, the suspicious temper of the Government, and the total absence of public opinion, it is scarcely possible to find an occasion for speaking truth, the Chinese lies heartily and universally in self-defence. With his numerous defects, however, some virtues are mixed up; and if the yoke that now weighs him down should ever be exchanged for the lighter pressure of laws evenly administered, and forms regulated by reason, there is no cause why the most civilized and industrious nation of the East should not acquire some of the hardier virtues of its Western brethren. The Chinese might, indeed, on his part, read them some useful lessons on the score of sobriety, for he is rarely intoxicated—of frugality, for he is seldom a spendthrift—and of obedience to elders and superiors, for he is usually courteous and respectful. And, after all, it must be owned that we view him through a somewhat uncertain medium—the accounts of strangers, whom he abhors, and who, in their turn, detest his modes of life. It requires no great stretch of the fancy to suppose a Chinese turning the tables on his describers. A periodical humorist, some years since, proposed the scheme of a strictly impartial history. It was after the following fashion. He collected the discrepancies of various narratives, and arranged them in the order of contradiction. From this novel species of concordance it appeared that Richard III. was a handsome and hump-backed personage, and among the best and bloodiest of rulers. The execution of Charles was represented as the most scandalous and sublime of deeds, and Cromwell as the most pious and profligate of mankind. It would not be difficult to portray the Chinese under equally conflicting phases. On the authority of *variorum* commentators, we might well describe them as obeying the precepts of a mild and rational philosophy, and practicing the most odious and atrocious vices. The Son of Heaven might be adorned with all the virtues of a benevolent patriarch, ruling a household of nearly 300,000,000 of souls according to the laws of primeval justice, and at the same time sowing divisions and fostering corruption among them, branding their foreheads,

slitting their ears and noses, and nintailing their backs. His ministers and mandarins might be impartially represented as the befitting satellites of so dubious a planet, carrying out his paternal or his tyrannical behests, and regarded by the grateful or oppressed provincials as the most beneficial or the most baneful of vicegerents. The mass of the people, again, might, with equal fairness, be delineated as grateful and obedient to the powers that be, dutiful to parents, decorous in manners, sober as if they lived in the State of Maine, and thrifty as if they had by heart "Poor Richard's Almanac." We might then go on to speak of them as the most incorrigible liars and thieves, as the most gross and sensual of nations, and produce a voucher for every one of our statements. An extremely difficult people are the Chinese to describe; and the perplexed disputants on "the China question" are really deserving of compassion, since, like the irascible travelers in the fable, they who maintain theameleon to be blue are in the right, and they who affirm it to be green are not in the wrong.

But perchance a minister of the Board of Foreign affairs in Pekin might feel a similar difficulty in speaking of the English people. From the report in his hands, he might justly say that the outside barbarians profess to regulate their actions by a book nearly as ancient as the writings of Confucius. The authors of this book—the sages and the prophets of the West—although not always in unison with one another, yet agree generally in preferring poverty to riches, in applauding abstinence and self-denial, and decrying the pomps and vanities of the world. But he might proceed: I learn from another report prepared by a mandarin of great experience in the ways of the English, and who enjoyed in the junk at Blackwall unusual advantages for observing them, that the great distinction between one Englishman and another rests upon his worldly substance. He who rides on horseback is more esteemed than he who trudges on foot; and he who is drawn by horses in a painted box is reputed greater than him who bestrides a saddle. A rich man may, by a sure though costly process, rid himself of a wife who has been faithless to his bed; but a poor one must retain his erring and inseparable spouse. A fortune that would purchase a thousand acres of the

best rice meadows in our happy country is lavished upon the education of the wealthy, while the poor, to whom learning in civilized China is wealth and station, are in barbarous England shut out from all the better schools, and myriads of them pass from the cradle to the grave in ignorance of letters. Moreover, the sages of the West inculcate upon their disciples the duty of neglecting this world, and of preparing daily and hourly for another; but so indocile are their hearers, that for the most part they are occupied either in amassing riches or in procuring for themselves pleasures on earth alone, and regard the prospect of another and a better world with as much indifference as they regard their own dreams or their neighbors' interests. An extremely difficult people are the *English* to describe.

To a foreigner acquainted with the language and the manners of the English, there can hardly be a more perplexing phrase than that of "merry England"—since in whatever quarter his observations are made, whether at an "at home" in Belgravia, the taproom at the "Three Cranes," a horticultural fête at Chiswick, or a village wake in Lancashire, he would detect few symptoms of mirth, ordinary or extraordinary. The amusements with which the Chinese recreate themselves are of a similar sober character, unless, indeed, noise and glare be the tokens of mirth. As regards noise, the drum of the Chinese ear must be of perdurable toughness to endure the incessant and discordant din it is in the habit of receiving; and as regards glare, his eye should be a well-constructed machine, since it everywhere and on all occasions is called upon to encounter bright colors, and very frequently the blaze of fireworks and illuminations. No people, not even the Flemish burghers of the fourteenth century, are fonder of processions than the Chinese. This kind of entertainment, indeed, combines their love of ceremony with their love of show. Their Nathans, and Swans, and Edgars, have their lines set in pleasant places, since both marriages and funerals are celebrated with great pomp and cost. In every city and town there are numerous livery establishments, where processions are arranged and supplied with all accouterments required for mirth or mourning. The contractor furnishes everything—boxes for carrying the bride's trousseau, biers for the deceased, pavilions for idols—sedans

for the ladies, and for the gentlemen also, (for it is ungenteel to walk)—banners, tables, articles of vertu;—in short, all the furniture of a drawing-room. The men and boys who carry the flags and the furniture resemble in their garb the attendants on a collection of wild beasts in England, since over dirty under-garments they throw uniforms blazing with scarlet and gold. The processions of the guilds in honor of their respective patron saints recall to us the very similar festivals at Florence or Ghent four hundred years ago. Among these guilds that of the carpenters is the most famous for its splendor. Their hero Lupan, the Tubal-Cain of Chinese legend, is borne in a shrine along the streets, followed by the members of the corporation, dressed in holiday robes. Silken banners embroidered with the most brilliant and hideous symbols wave before his shrine; young girls, bedizened with paint and flowers, perched on high seats under artificial trees, are carried upon men's shoulders; bands of music, trays of sacrificial meats and fruits succeed; and the whole scene is not less gorgeous and grotesque than the final glories of a London pantomime.

In our own land, theatrical entertainments have seldom the sanction of the Church, and even a benefit-night for a hospital or for distressed weavers is viewed with alarm and suspicion by divines. But in China the stage and the temple are upon better terms. The reverend gentlemen themselves hire a company of players, and send their neophytes round with a subscription-paper for the pit and boxes. We regret to add that the purlieus of the theaters are let as gaming-houses, with considerable profit to the managers. The art of puffing is well understood. One company is announced by its *locataire* as the "Happy," another as the "Blessed," another as the "Glorious Appearing," and the bills of performance are as gorgeous as our own in red, blue, and cabalistic decorations. But the theaters are extemporary sheds of wood, often capacious enough, however, to contain two thousand persons. The Chinese are a more enduring audience than even the Germans. The latter will sit seven or eight hours without manifesting any more impatience than a few whiffs of their meerschams will allay; but a Chinese endures performances that extend through three entire days, requiring only an occa-

sional interval for eating and sleeping. The Chinese stage is as good a school of archæology as the Princess's Theater itself, since the dresses, which are costly and gorgeous, afford the best samples of ancient national costume. The Cathaian Theater, however, requires and would repay a separate notice, and we must now pass on to the out-door amusements of this singular people.

Strength rather than skill is displayed by the athletic, and they have few sports corresponding to the manly exercises of Europe. They hurl iron bars, and lift beams heavily weighted with stones, to prove their muscles. But such strenuous pastimes are not the most popular. Able-bodied gentlemen will spend half a day in kicking shuttlecocks with their heels, in flying kites, carrying birds on perches, rocking in boats, or simply sauntering hand-in-hand through their gardens. Gaming, however, is the "universal passion." A Chinese will stake his house, his family, his gown and petticoats, even his own personal freedom, everything except the graves of his fathers, on the hazard of the die. "Crabbed age and youth" are equally addicted to this vice. No place is sacred—no grade is free from it. The clergy gamble in the temple-porch; the soldiers gamble in their sentry-boxes; porters in the streets gamble for the chance of the next customer; and boys gamble for their cakes and toys with the shopman who vends them. Gaming-houses are, indeed, prohibited by the Government; but they afford the local authorities so fertile a source of revenue, that the prohibition is null, and justice is blind and enriched. These temples of fortune are often stained with violence and murder. Suicides are committed openly in them; and so cheap is life in this redundantly-peopled empire, that nothing is more ordinary than for the corpse of a loser to lie unregarded amid an eager crowd of dicers and card-players. Even the ceremonies of this universally-polite nation are laid aside in these receptacles of vice; and the gamblers of Nankin and Canton are as rude and reckless of good manners as if they carried bowie-knives at their girdles, and did homage to Stars and Stripes instead of the Green Dragon.

In the foregoing sketches of China as it has been, or perhaps more properly, is—for a score of centuries has scarcely introduced a single change in the people and

their habits—we have endeavored to exhibit a few of the more striking features of a race which, apparently, has the power to exert more influence upon England than England has, at present, been able to exercise upon them. From a squabble in the port of Canton has proceeded a temporary suspension of the public business of Great Britain; from a positive or a technical infraction of a local law has issued a dispute that has already cost many lives, and laid in ashes a considerable portion of one of the most populous and busy cities of the East. Our empire is, indeed, so widely extended, that an event which occurs at the antipodes may vibrate even in the heart of Downing-street; and we undergo one of *our* peaceful revolutions—a change of administration—because an Eastern pro-consul has obeyed or exceeded the orders of a despotic master. We do not apprehend any very serious disaster from collision with China: yet the arms of the undisciplined Germans more than once or twice caused every cheek in imperial Rome to turn pale, and the barbarians of Cabool have inflicted a temporary disgrace on the military reputation of England. It is well to count the cost of a contest with the Chinese. It is very likely that we may overturn a dynasty, or even break up the cohesion of one of the most ancient empires in the world. We may easily, with our might, our science, and our resources, inflict incalculable suffering upon myriads of men. We may also undergo considerable calamities ourselves in the assault of a kingdom so strongly intrenched by nature, and so fortified against invasion by the prejudices of its inhabitants. For these causes, we have seen with sincere regret the mere party aspect with which our present relations with China have been invested, and the want of philosophic calmness which has marked every debate upon them.

In a few days, the people of Britain will have determined by its suffrages whether, in its opinion, we have right on our side, or whether we have intentionally or inadvertently done wrong in committing ourselves to a war with the local authorities of Canton. The determination will probably be influenced more by the passions of the moment, and the representations of interested parties, than by any broad or comprehensive view of the question at issue. We have endeavored to supply within our brief limits a few facts, independent of the im-

mediate debate, which may serve to explain and illustrate the character of the people with whom we are now at variance.

From these facts, it will be seen that China stands in some degree apart from the ordinary type of Oriental man; that, from its ancient and subtly-organized civilization, it occupies a middle position between Europe and Asia. From the examination of its physical and political circumstances, it appears that, although vulnerable, it is not necessarily decrepit; and although oppressed by it, not generally disaffected toward its native government. The course of our conquests, or our peaceful acquisitions in India will be no precedent here. In the Chinese, we have to deal with a nation crafty enough to meet on equal terms our ablest diplomatists; strong enough to offer an obstinate resistance; and sagacious enough, if once its sectarian prejudices can be overcome, to learn from its opponents how to fight or how to elude fighting. In our estimation, these are infinitely more important subjects for consideration than the dispute whether Sir John Bowring has or has not exceeded his commission; whether his law be bad, or his discretion be worse. And in this belief, accordingly, we venture to recommend to our law-makers and our readers the study of the Chinese people rather than of the Chinese question; for the latter is for the moment, while the former may involve us in responsibilities even

more various and weighty than any we have incurred already by our gigantic acquisitions in Hindostan.

While drawing attention to these points, we have endeavored also to keep in view the historical, no less than the commercial, aspect of China and the Chinese. It is erroneous to esteem this ancient and highly-civilized people merely as the potters and tea-dealers of the world. It is equally erroneous to derive our impressions of them from their few points of contact with our traffic and interests, where native and European vices encounter and exasperate one another, and to leave out of sight that infinitely larger portion of the country where the native laws and customs still retain much of their pristine integrity. The Chinese empire, indeed, is not so much contemporary with the Europe of the nineteenth century as with the despotism of Justinian and the formal court of Alexius Comnenus. Between these and the institutions of China, if our space permitted of the comparison, a minute and instructive parallel might be drawn. Neither blue-books nor Sir John Bowring, however, will afford a just or probable picture of this great stationary empire. For such a portrait we must revert to the writings of much earlier observers, who beheld the "seat of Cathaian Khan" six centuries ago, and gauged, in a more comprehensive spirit than more recent travelers have done, the outer and inner life of China and the Chinese.

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From Titan.

A N D R E W F U L L E R .

BY HIS GRANDSON.

AMONG the earliest recollections of childhood, perhaps next in vividness to the living forms that find a place there now, almost as fresh as then, is that of a full-sized life-picture hanging over the mantel-piece on our parlor wall. Though I have often seen it since, I think my first recol-

lection of it is the best, and it is pictured on my memory to-day as it then appeared. It was the portrait of a strong athletic man, tall, broad-chested, and firmly set. His head corresponded in dimensions, and harmonized in expression, with the rest of the figure. The hair was parted in the



middle, and ample overhanging eyebrows made almost forbidding the stern and truthful eye that looked from underneath them. A massive Johnsonian expression gave a power to the face I have rarely seen surpassed. This was my grandfather, Andrew Fuller, and forms the basis of the only idea I have of his person, for he died long before I was born.

It is strange that though I have now formed *another* estimate of him from his writings, and from household traditions I was then too young to understand, it is not a *different one*. Just the same feeling comes to me that made me, as a child, feel almost afraid to be alone in the room with the picture, because of the solemn power which came from the canvas, and in my childish fancy imparted itself to the very furniture of the room. When I seem to call his form before me, not from that picture, but from the *spirit of his writings* and deeds, I find the old child-feeling come back again. If looking at the portrait in supposed ignorance of the man it represented, and being called upon to prophesy what would be his characteristics, I should say, "He would leave his own mark on whatever he touches. His thoughts will be characterized by great strength and decision. In speech he will be slow and pausing, and to guess at the moral expression, he will, spite of the hindrances of friends, or the open opposition of enemies, do what he believes to be right."

Such, in truth, are the features we mark in reading his life. His real greatness consisted in his making a great outline of truth, and *filling it up with his life*. If any have been accustomed to regard only the strength of the outline as it is given with such power and distinctiveness in his writings, they have failed to mark that harmony of thought and work which is the basis of all true greatness of character.

Walk round the cathedral aisles where the memorials of the great dead are found, and you will see the tombs at which the crowd stop and hold their breath in reverence are not the tombs of dreamers, but of workers, all of workers. Mark them as they pass from statue to statue! They come to Shakspeare, and the memory of pleasant hours of quiet enjoyment finds its way to the face. But moving on to Howard, see how they pause before the tall figure with a brother's love

beaming from the cold marble, and the chained prisoner at his side; while the lifeless memorial of a love yet warm and living bids the "big tear steal unchallenged to its shrine."

The life of Andrew Fuller comes to us under two aspects, mentally and actively. Mentally, surrounded by Fatalism, he worked out for himself and others the great truth of human accountability, and its twin doctrine of the freeness of Christ's Gospel. Actively, he came before us as connected with increased labors in the Church at home, and as sustaining almost alone, in England, the early efforts of those vast Missionary Associations now so powerfully at work in our midst. He is full of strength in either of these aspects; he is *great* in the harmony of *both*.

Andrew Fuller was born in the little village of Wicken, in Cambridgeshire. His father was a farmer, and Andrew's early life was spent in ordinary farm-work. His education was that of an ordinary farmer's son in the middle of the last century, and that, as every body knows, was but poor fare for an inquiring lad. He began, however, to "work his own way," even in such a common-place occupation as that of a "farm-yard laborer." He gives us a capital story of his first efforts at plowing, which I may well place here as the key to the life I am about briefly to sketch. "My father," says he, "was a farmer, and in my younger days it was one great boast among the plowmen that they could plow a straight line across the furrows or ridges of a field. I thought I could do this as well as any of them. One day I saw such a line, which had just been drawn, and I thought 'now I have it.' Accordingly I laid hold of the plow, and putting one of the horses into the furrow which had been made, I resolved to keep him walking in it, and thus secure a parallel line. By and by, however, I observed that there were what might be called wriggles in this furrow, and when I came to them, they turned out to be larger in mine than in the original; on perceiving this, I threw the plow aside, and determined *never to be an imitator*."

Now, not only in following his team afeld, but in the moral and spiritual history of his neighbors, did young Andrew, while yet a country laborer, find "wriggles" he hesitated to imitate. In order to understand what these wriggles were,

it is necessary for the reader to remember that one of the many out-growths of Puritanism was a hard, selfish fatalism, known by the designation of "Hyper-Calvinism." It is not perhaps difficult to account for this heresy making way in the seventeenth century. There was something in the mission of the Puritans that led them to regard themselves as a "peculiar people," chosen for mighty deeds, earthly and celestial. It is not surprising that a theology, growing among a people who had become familiar with the resistless advances of the "Ironsides," and the battle-cries of "long Marston Moor" and "Dunbar," should have assumed, as one of its phases, a fatalistic cast. Certain it is, however, that at the time Andrew Fuller was growing into manhood, it was crushing the growth of pure and undefiled religion in England with the "tread of the iron foot;" and had its heels at that very time on the fair village of Soham. The manner in which our strong-headed countryman worked his unaided way, slowly and surely, out of the network which this fatalistic logic had cast about him, is a most interesting and curious piece of mental biography. The circumstance which first set Andrew Fuller brooding on this subject was the drinking habits of a professor of religion. Perhaps if all moral philosophers had started from the *living subject*, some of them would have arrived at different conclusions. "One of the members of the church," says Andrew Fuller, in his diary, "having been guilty of drinking to excess, I was one of the first who knew of it. I immediately went and talked to him, as well as I could, on the evil of his conduct. His answer was, that he could not keep himself, and that, though I bore so hard on him, I was not my own keeper. I told him that his way of talking was merely to excuse what was inexcusable. He, however, was offended, and told me I did not know the deceitfulness of my own heart." Now the erring propensities of this wandering sheep opened to the Church, and to the mind of Andrew Fuller, the recondite question of the "power of sinful men to do the will of God." Practically, as even the greatest fatalists do, Andrew Fuller acted upon the full responsibility of his patient. But now the metaphysical difficulties of this problem were opened for the first time to his mind. One solution after another was tried and rejected, after slow and patient

consideration. Various books within his reach were studied, and sometimes he was attracted by some quaint and word-catching solution of his perplexity. Dr. Gill had explained the matter, by distinguishing what was in the power of the hand and the heart: that the hand might be *able*, and the heart not *willing*. Of course, this and all kindred explanations throw as much light on the question as would the consoling affirmation of a watchmaker, that the "hands of your deranged watch were quite able to tell the time, if the spring were not broken." About this time some one recommended to him "Edwards on the Will," as a book that would be likely to help him. Strange to say, not being much acquainted with books, he confounded the work of Dr. John Edwards, an Episcopalian Calvinist, entitled "Veritas Redux," with that of Jonathan Edwards, of New-England; nor was it until two years afterward that he discovered his mistake. Meanwhile, he had diligently pursued his search, and wrote out as its result, the substance of what he afterwards published under the title of the "Gospel Worthy of all Acceptation." At length he lighted upon the real Jonathan, and found in his work on the Will, and in his sermons, the views he had formed, confirmed, and amplified. Modern metaphysicians may not be perfectly content with the acute subtleties of Jonathan Edwards, or their more practical exposition by Andrew Fuller. They must at least wonder at a man, with no philosophical training, handling one great branch of the divine science with the strength and ease of a master, and reaching a stand-point so far in advance of his associates.

During these struggles he had been invited to become minister of the church in the same town in which he had lived since he had been six years old. Not very long afterward, he received an earnest invitation to Kettering, in Northamptonshire, presenting a sphere of work more suited in every way to his growing power as a thinker and preacher. It was a long time, however, before he would consent to go, and the separation cost him as much grief as if he had lost his dearest friend. Let it be remembered by all fame-seeking preachers, that at that place he was so loth to leave he had never received *more than* £13 *sterling per annum*, and had made two unsuccessful attempts to add a little

to this pittance by keeping a little shop and a school.

Shortly after his settlement at Kettering, he became an author, and wrote the well-known treatise entitled, "The Gospel Worthy of all Acceptation." The different reception it met with is now a matter of history. By many English and Scottish Christians, of all denominations, it was hailed as the harbinger of new life to the Church, while others denounced it as terrible heresy. One of the latter class thus concludes a unique epistle. "*Time was when no such calf would ever have been suffered to be born or nourished in the little meeting at Kettering!*" Meanwhile the recognized champions of the opposite creed were busy girding themselves for the fight, and soon rushed sword in hand into the arena. That they did not, at all events, lack a commendable chivalry, or show the white plume, may be gathered from the following extract from Andrew Fuller's diary, August 8: "Some exercises of mind this week through an advertisement of Dr. Withers, in which he threatens to *reduce my late publication to dust!*" The reader may smile at this style of controversy; but it was a decided step in advance of the Reformation and Puritan discussions. Luther called Calvin a pig; and John Milton thus writes to Salmasius: "Have you the impudence, *you rogue*, to talk at this rate of the acts and decrees of the chief magistrates of a nation?" John Bunyan, the divine dreamer, boldly advanced his creed on the matter of strong English. Writing to the Bishop of Gloucester, he says: "It can not be worth our while to lay out any considerable matter of heat, either for or against doubtful opinions, utterable modes, rites and circumstances of religion. It would be like the apes blowing at a glow-worm, which affords neither light nor warmth." Yet the moderate supply of heat he brought to bear upon the bishop involved such appellatives as "a brutish man," "a clambering thief," "an eel at an angle," etc.

At the age of thirty-eight, Mr. Fuller commenced his great mission labors, which we may call the "Gospel Worthy of all Acceptation" put to life, as it had just been put to speech and paper. He had worked out a great result by long and patient thinking. In the second epoch of his life, he changes the instrument, but not the theme. What he had written

and spoken, he set to the dull music of hard, grinding toil, and, *until death*, worked out the conception of his earlier years.

Before following him in this second stage of his life, we must turn aside from his public history to see him in the midst of family sorrows. His eldest girl, whom he fondly loved, seemed near death, and he thus writes concerning her in his diary, May 7: "I was tolerably supported under the approaching death of my poor child, which I saw drawing on apace. I saw I must shortly let her fall! With floods of tears—with all the bitterness of an afflicted father mourning for his first-born, I committed her to God, to his *everlasting arms, when she should fall from mine.*" The thought of his child's death had brought on such an illness that he was unable to be near her, but was confined to his bed in a neighboring room, a weary watcher for the dead; listening for every sound that came from the chamber of his dying child. The last hour came, and the sick father thus writes: "On Tuesday morning, as I lay ill in bed in another room, I heard a whispering; I inquired, and all were silent! all were silent! but all is well!" A page or two farther on, we read: "To-day I felt a sort of triumph over death. I went and *stood on her grave* with a good deal of composure!" Surely that Everlasting Father, into whose arms he let her fall, has given her back to him now—a child of immortality.

It was in the autumn of the year 1792 that modern Missions commenced in England. Let us pause and inquire what was going on in other parts of Europe in this same year of our Lord? The priests of France were engaged in a far different work to the poor despised ministers of Northamptonshire. They were watching the political fortunes of the day, and bidding for the favor of the stronger party. Their property had been appropriated for national purposes by the sweeping measures of the revolutionists, and they had been compelled to change their occupation of strangling liberty into that of keeping their own possessions from a power against which all their incantations and bead-counting had been impotent. It was only three years before that the gloomy walls of the Bastille had been swept away by the fury of the multitude, and the prisoners set free; on that day

twelvemonth, the king came to swear fealty to the Revolution. The free space of the Champ de Mars was filled with about 400,000 spectators—an ancient altar was erected in the center, and 400 priests with tricolored sashes were posted at the four corners. Mass was celebrated amidst the sounds of military music; and the Bishop d'Autun blessed the "oriflamme and the banners." On the same spot on which the Bastille had stood, and the chains of its prisoners clanked, a grand ball was held, and the words "Ici on danse" were emblazoned at the entrance. With the smiles of the king, and the forced benedictions of the Church, the Revolution had taken heart. But the year following witnessed other and more terrible scenes. The moderate counsels of the Gironde had been exchanged for the daring designs of the Mountain and Jacobin Clubs. On the terrible 2d of September, 300 assassins massacred all the political prisoners in cold blood. Meanwhile, the prevailing philosophy was indirectly aiding the blood-thirsty spirit of the times. The healing creed of Jesus of Nazareth had been exchanged for the worst forms of Materialism. What mattered it that the cemeteries of the capital were being filled with the slain, when the creed of that day inscribed over them the motto, "Death is an eternal sleep!"

In the autumn of this same year 1792, a few ministers met at a house still standing in the quiet town of Kettering, and formed the grand, but then ridiculed, design of preaching the Gospel to the *whole world*. Nor do these two things, thus strangely forming part of the same year's history, lack another link of relation.

The revolutions of 1645 and 1688 in England had been steadily working out grand results. It is true that their political vicissitudes had been almost as great, though not so bloody, as that of France. Yet beneath the surface of things there had been a quiet growth of civil and religious freedom, springing from earnest religious conviction, which, after awhile, manifested itself in a thousand schemes of charity and beneficence. One of these schemes was the great missionary enterprise. There were thus in Europe, almost at the same time, two movements taking an *aggreivine shape*, and both tracing their ancestry to the English Revolution. The one was fitly personified in the person of Napoleon looking over the frontiers

of the empire to the snows of Russia and the quiet hills of England, wishing all Europe were his own. The other was the association of a few men in England, unknown to fame, having for their object the subjugation of the world for Christ! The former filled Europe with its blaze, but soon disappeared in the quiet waters of the Mediterranean, behind the rocks of St. Helena! The latter at this moment fills the *world* with its results, and, as its last offering, has opened Central Africa to civilization and to faith.

At the singular meeting just now referred to, among those present were the well-known names of Fuller, Sutcliff, Ryland, and Pearce. In addition to these was one William Carey, then elevated to the oversight of a Baptist Church in Leicester, but formerly a poor, and, as report says, a very indifferent cobbler. Before this meeting closed, the sum of £13, 2s. 6d. was subscribed towards the new Society. There lies before me on the table, while I write, the first minute-book of the Baptist Missionary Society, written by Andrew Fuller. It commences with an account of the meeting before mentioned, and extends its minutes to the year 1799. It records on the first page a resolution "that the Rev. Andrew Fuller be appointed secretary, and the Rev. Reynolds Hogg, treasurer," etc. Every subsequent step in the toiling march is recorded with careful exactness. What could be done for the conversion of the world with *thirteen pounds two-and-six*? Every one of this small band would have fallen before the vastness of the work, and the laughter of the incredulous, if it had not been for the bright remembrance of a *three years' life* of almost solitary work, which, after nearly eighteen centuries of toil and sorrows, yet filled their own souls with its healing life!

Opening the minute-book at page 19, I find the following addenda to the minutes of the committee:

"N.B. The treasurer put into Mr. Squire's bank, on		
November 1, 1792,	.	£87 17 0
January 7, 1793,	.	27 3 6
		£115 0 6"

So the funds of the society are getting on, and the hopes of the projectors grow apace. A vigorous effort is now made through the country to procure funds, and



form district societies, to aid what the minute-book calls the "primary society." I can assure the reader that these journeys in no way resembled the trips of a modern missionary deputation, whom Squire Johnson, with the pretty house and park, is so glad to see, and who find their names placarded at every town, in expectation of their visit, and when they get there, never call on individuals, but take the cash in a lump from the district treasurer, and, finally, who go home, not foot-worn and weary, and loaded with abuse, but crowned with all kinds of itinerant honors, and much the better for the change! These early chronicles record that a Mr. Thomas, afterwards one of the first missionaries to India, got into Bath on the errand of collecting for the Missions, wet through, late on Saturday evening. He preached the following morning, but so unmoved were the people that, says he, "I thought I should get nothing here, but some woman, after hearing the case, sent in one penny; I thanked them, and set down 'Bath one penny!'" This appeal seems to have moved the ecclesiastical pride of Bath, and our collector ultimately went away with some £20. To this incident may be added another, occurring in one of Andrew Fuller's journeys. He called one day on a celebrated clergyman of the Church of England, bearing, perhaps, the most popular name at that time among the Recordite party. He asked, without telling his name, for a subscription for the mission. The clergyman refused, and spoke in slighting terms both of the movement and of the body from whom it emanated. He added, however, "There is one great man among you, and his treatise entitled the 'Gospel Worthy of all Acceptation' is one of the most masterly productions I know." The following colloquy ensued. *A. F.* "For all the faults in that work, sir, I am responsible." *C.* jumps from his chair with eager apologies, and ultimately presses a subscription. *A. F.* (in his own deep bass) "No, sir, not a farthing!"

The next morning recorded in the minute-book is that of finding men willing and suitable to go abroad as missionaries. The before-mentioned Mr. Thomas had already been preaching in India, and was most anxious to return. At the same time, William Carey volunteered his services. This wonderful man, while yet a village cobbler and schoolmaster, had

learned several modern languages. Just before he set out as a missionary, he presented to Dr. Ryland an elegant translation of a volume of Dutch sermons and dissertations, which a worthy brother in Holland had sent over, under the delusion that our English divines could read it. Mr. Carey, some time after his appointment to go with Thomas, had not seen his companion. "It was late in the evening," says an eye-witness, and while in full deliberation, "that his arrival was announced. Impatient to behold his colleague, he entered the room in haste, and Mr. Carey rising from his seat, they fell on each other's necks and wept." All was hope and resolution. Mr. Carey's memorable words, "Expect great things," "Attempt great things," had become the spiritual watchwords of the day. "It is clear," said Andrew Fuller to Carey, "that there is a rich mine of gold in India; if you will go down, I will hold the ropes."

The day of departure soon arrived. On the 13th of June, 1793, Carey and Thomas, with their families embarked for India in the "Kron Princessa Maria," a Dutch East-Indiaman. One of the missionaries turning round to a friend at the last moment, exclaimed, "The guns are fired, and we are going with a fine fair wind. Farewell! farewell!" In the spring of this same year, and only a fortnight before William Carey started for India, to attain a reputation before which the oriental lights of the English universities were soon to grow pale, a young Frenchman, driven by the English fleet, sailed from an island of the Mediterranean. It was Napoleon Bonaparte, thwarted in his first military undertaking, and with his mother and sister on the way to Marseilles!

We must afford just a glimpse "down into the mine;" for we must all be curious to know how the missionaries fared on the "other side of the water." Not long after the time we have been describing, a little boat is moving languidly along a river of the Sunderbunds in India, a wild district where wild beasts prowl. It contains Carey and Thomas, and their families, attended by one native. They are totally destitute of provisions and "have not where to lay their heads." *Yet by this time the Book of Genesis is translated into one of the native tongues, and its revision commenced!* Moving

slowly down the river, the dipping oars making an uncertain sound, the voyagers espied upon the bank a neat chateau, and in the garden an English lady and gentleman. The travelers rowed to the shore, and accosted them, freely explaining their mission and necessities. The gentleman as frankly told them their scheme was completely utopian, but added, "Land your party, for my house is your home until you can find one more suited to your purpose; you may stay for six months if you please." The name of this gentleman, Charles Short, will be had in everlasting remembrance by all those who love that real hospitality which can not be returned.

But we must go back to Andrew Fuller, toiling at the ropes in England. If wonderful work was going on abroad, there were toils in England at which the spirit of industry herself might stand amazed. Besides all his secretarial labors, he was busily engaged in replying to antagonists, and in preparing fresh works for publication. Two of these may be especially named, the "Calvinistic and Socinian Systems Compared," and the "Gospel its own Witness." Both these books contain hard thinking, and exhibit, as well as any, the qualities of the author's mind. They are purely *à posteriori* arguments, and bring the spirit of Bacon into the region of theology with a rigor and power that of its kind has never been excelled. It is very refreshing, after the barren subtleties which characterized even many of the Reformation controversies, to hear this loud demand for fruits. But his skill was not confined to tracking the course of a system or a creed. He was an acute abstract reasoner, and he has left us a fine specimen of speculative thinking, in the concluding chapter of the "Gospel its own Witness." It is well known that this chapter, entitled the "Work of Redemption not inconsistent with modern Ideas of Creation," formed the basis of "Chalmers's Astronomical Discourses." Andrew Fuller's style was direct and weighty, but never dull. Pointed and clear as that of Paley, but more massive and strong. There is no brilliance and little metaphor, yet we are ready to say that he who could have written such a passage as the following, taken from the conclusion of the "Gospel its own Witness," could have given us more of the same kind. "And now I appeal to the intelligent, the serious, and the candid reader, whether there may

be any truth in what Mr. Paine asserts, that to admit that God created a plurality of worlds, at least as numerous as what we call stars, renders the Christian system of faith at once little and ridiculous, and scatters it in the mind like feathers in the air. On the contrary, it might be proved that every system of philosophy is little in comparison of Christianity. Philosophy may expand our ideas of creation; but it neither inspires a love to the moral character of the Creator, nor a well grounded hope of eternal life. Philosophy almost *can place us at the top of Pisgah: there, like Moses, we must die*; it gives us no possession of the good land. It is the province of Christianity to add, "*all is yours!*" When you have ascended to the height of human discovery, there are things, and things of infinite moment, that are utterly beyond its reach. Revelation is the only medium by which, standing as it were "on nature's Alps," we discover things which "eye hath not seen, nor ear heard, and of which it never hath entered into the heart of man to conceive." One more extract may be given to illustrate the ringing truthfulness and calm wisdom that characterize his more practical teaching. It is extracted from his memoir of Samuel Pearce; perhaps it would be difficult to find in biographical literature a nobler inference from a noble life. "Finally," he says, "in him we see that the way to true excellence is not to affect eccentricity, nor to aspire after the performance of a few splendid actions; *but to fill up our lives with a sober, modest, sincere, affectionate, assiduous, and uniform conduct.* Real greatness attaches to character; *and character arises from a course of action.* The solid reputation of a merchant arises not from his having made his fortune by a few successful adventures, but from a course of wise economy and honorable industry, which, gradually accumulating, advances by pence to shillings, and by shillings to pounds. The most excellent philosophers are not those who have dealt chiefly in splendid speculation, and looked down upon the ordinary concerns of men, as things beneath their notice; but those who have felt their interests united with the interests of mankind, and bend their principal attention to things of real and public ability. It is much the same in religion. We do not esteem a man for one, or two, or three good deeds, any further than as

these deeds are indications of the real state of his mind. We do not estimate the character of Christ himself, so much from his having given sight to the blind, or restored Lazarus from the grave, as from his *going about continually doing good.*"

In addition to all the literary labor involved in the writing of these books, and the controversy they evoked, Andrew Fuller was perpetually on the move through England, Scotland, and Wales, advocating the claims of the new society. Now, apart from all the toils of collecting, imagine, good reader, the journey of a religious reformer through the provinces of England and Scotland more than fifty years ago! Think of Luther and Melancthon making a companion tour in Italy, and we will have a notion of what Andrew Fuller met with in *some parts* of the country. He made four journeys into Scotland, and on one of them visited Chalmers whom, as all readers of his Life will remember, he persuaded to preach without notes. Imagine the keen theological glance that would greet him north of the Border. After one of his Scottish journeys, he received a remonstrant letter from one of his own persuasion in Scotland, on his defective order and discipline. His reply, in the form of a parable, is a keen satire on the hair-splitting *doctrinaires*, and has plainly a reference to his comparative solitude in the work he had undertaken: "In one of the new Italian republics," he writes, "two independent companies are formed for the defense of the country—call the one A, and the other B. In forming themselves and learning their exercises, they each profess to follow the mode of discipline used by the ancient Romans. Their officers, uniforms, and evolutions, however, are, after all, somewhat different from each other. Hence disputes arise; and B refuses to march against the enemy with A, as being disorderly. A gives his reasons why he thinks himself orderly; but they are far from satisfying B, who not only treats him as deviating from rule, but as almost knowing himself to do so, and willfully persisting in it. A, tired of jarring, marches against the enemy *by himself*. B sits at home deeply engaged in studying order and discipline. 'If your form and rules,' says A, 'are so preferable to ours, *why do you not make use of them?*' Discipline is a means, not an end. Be

not always boasting of your order, and reproaching others for the want of it. It is true, like the Quakers in 1745, you have *bought waistcoats for our soldiers*, and we thank you for them, but we had rather *you would fight yourselves.*"

Besides these journeyings and fightings, Andrew Fuller had to keep up a constant correspondence with the missionaries, to see to their supplies, and to conduct a paper war with the East India Company, who were trying hard to thwart their operations. Let it be well remembered that their efforts proved entirely fruitless, through the intervention of the Marquis of Wellesley.

The old minute-book tells of a not very polite note received from a shipping clerk, wherein he threatens to sell a large package (directed T. & C.) to pay for warehouse-room, if it were not immediately taken away. A committee meeting was held on this mysterious package, and Andrew Fuller was *unanimously deputed to go to London to see after it.*

Smile not, good reader, at the authority of a committee being required in those days to send a secretary from Northamptonshire to London. The luxury of coaches had been hardly introduced; for the first stage-coach blew its blast through the green fields of England, and crossed the Cheviot Hills, in the year 1788, on its way from London to Edinburgh. Those were the days in which men made their wills, and left affectionate messages, before they ventured far from home. On inspecting the cask in question, it was found to contain supplies sent to India a long while before, and having had some mysterious connection with Copenhagen, had reached the office in London again in safety. The minute-book adds, with a note of admiration, "Alas! we now find that our brethren had perished, if they had not engaged in trade!" The explanation being, that the committee, hearing that the missionaries were getting a livelihood by work, had addressed a remonstrance to them, on the ground that it might check their missionary zeal.

This sketch draws near the close, but one or two incidents must not be omitted. Andrew Fuller once formed one of a deputation to one of the then Secretaries of State, I believe, Earl Grey. It was on some matter connected with the missionaries in India. In the course of the interview, his lordship, with genuine diplomatic

courtesy, remarked, "that he quite approved of *liberty of thought* in matters of conscience." A deep voice, in measured words, answered from the corner of the room, "My lord, we do not ask for liberty to *think*—that you can not give or take away; we ask for *liberty to act*." His lordship started, and, looking round, encountered the stern eye of Andrew Fuller. Looking once more, and finally, into the minute-book, I find a striking answer to an objection commonly taken to the missionary movement, "that it carries sympathies out of the nation, for which there is plenty of need at home, and that the feeling which prompts it depends a good deal for its life for the mere love of distant scenes and novel events;" which feeling Coleridge put into the statement, "that if a railway were opened to the moon, every one would take shares." I find that, in those early days of straitened funds, in consideration of the ignorant state of *Cornwall*, the Society employed, at two different times, no less than four missionaries! and frequently gave aid to village interests. And now, alas! the minute-book draws to a close, for the hand of the writer was growing weary, while the soul that moved it "waxed stronger and stronger." In the year 1815, Andrew Fuller was working at his desk in the study at Kettering for more than twelve hours a day, his strength hourly failing from the heavy toil. His wife sits quietly at work by his side, but the tears will fall upon the knitted hose.

An exclamation escapes the overtaken husband, scanning his work in all its stages: "That which is crooked can not be made straight, and that which is lacking can not be numbered." She must speak now, and so, looking up sadly, she says, "You have hardly time to speak to me now, dear! My friends at home are kind, but they also say, 'You have no time to see or know us; you will soon be worn out.'" He replies, solemnly, yet tenderly, "I know it, but I can not be worn out at better work."

It was too true! The hands still "held the ropes" with a firm grasp, but it was plain to all that the strain was too much. Before we see the grasp released, let us take one more glimpse of the mine below. Wonderful work was going on there, and every now and then a cry came cheerily up the shaft, that jewels shining with im-

mortality rewarded the long toil of the searcher. If the reader would know the result of these first missionary labors in India, let him turn to the tenth memoir "respecting the Translation of the Sacred Scriptures into the Oriental Languages by the Serampore brethren." After perusing it, let him say whether history has recorded any literary labors of greater magnitude. It is enough now to say that, after a full record of the work accomplished, the memoir touchingly concludes, saying, "that the original mover of this great design is yet alive, and though feeble, in the full possession of his faculties." The "consecrated cobbler" lived to see two hundred and twelve thousand volumes of the Scriptures translated by himself and brethren *into forty languages*, and to know that these languages, at the most moderate computation, were spoken by *two hundred and seventy millions* of immortal beings! Two years after the compilation of this volume, William Carey "languished into life" in the warm eastern air, often trying to the manhood of colder lands, but a gentle nurse to the old and dying.

The "Gospel Worthy of all Acceptation," written on the living page, was coming to an end. At the same time that Andrew Fuller was feeling that he had not very long to live, he heard that his companion in work and council, Sutcliffe, was on his dying-bed. "Well," said he, "the government is upon His shoulders, ours will soon be from under the load; but while we are reducing in number and increasing in labor, ours may be heavier for a time." Yes, it was heavier, but only "for a time;" the letter containing these words is under date March 24, and he died in the May of the following year.

The day of darkness to his own family, and to the Church with which for many years he had been connected, came at length. To him a day of light, and a day on which he uttered calm, strong words about the unknown land before him. Hear them, reader. "My mind is calm—no raptures, no despondency, my hope is such that I am not afraid to plunge into eternity."

On Sabbath-day, May 7, 1816, he is listening eagerly to his congregation singing in the "meeting-house" adjoining his house. The simple strains he had so



often joined before, now stir a voiceless child." He *did* worship; and though all music in his soul. Turning to his child, unheard by mortal ears, the strain mingled with another melody, and was heard he says, "I wish I had strength, Sarah." upon another shore!  
 "To do what, father?" "To worship,

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From the British Quarterly Review.

## THE DOCTRINE OF INSPIRATION.\*

To attempt to analyze Mr. Macnaught's volume, and to deal with it in detail, would be to bestow more space upon it than it deserves. But the question of inspiration is a great and a somewhat urgent question; and though our own views on this topic have been often expressed, the time has come, we think, in which it behoves us to present those views to our readers in a form as carefully digested, and in terms as explicit, as may be.

We shall, in the first place, glance at some points relating to the evidence in favor of the inspiration of the Hebrew and Christian Scriptures considered as a FACT.

1. Every one will feel that human reason must have its province as a judge in regard to any supposed revelation. To suppose that any such communication has been made from God to man, must be to feel assured that it has been attested by its appropriate evidence. The prophet through whom such intelligence comes must have evidence warranting him to believe that he has become the subject of such illumination. The evidence must be supernatural, but the natural reason of the man will be competent to judge of its value. It will, of course, be only moral evidence. Though supernatural, it will not be such as to preclude the possi-

bility of resistance. But it will be sufficient evidence—sufficient to make submission to it imperative. What is true in this respect of the prophet, must be true of the people to whom the prophet-message is addressed. In their view, the message must take with it its proper evidence—evidence of which they themselves will be the judges. Both in the times of the Old Testament and the New, the people were commanded to try the spirits, and were expected to distinguish between divinely-commissioned men and mere pretenders to such authority. To believe without evidence would be idiocy, and to call that evidence which the reason can not understand and appreciate would be absurd.

But the evidence of a supposed revelation will not be all external. There will be evidence, either for or against its claims, arising from its *contents*. On these, also, the reason of man has, in a measure, to form its judgment. The common division of Christian evidence into external and internal suggests this conclusion. It is supposed, in this distinction, that we are capable of distinguishing, in some degree, between what is fit, and what is not fit, to have come from the Supreme Being to our race. It supposes that we not only know *that* God is, but that we know something as to *what* he is. If we can know nothing of God, we can know nothing of the proper or the improper in what is said to have come from Him. Apart from revelation, nature is our only source of Divine knowledge.

\* *The Doctrine of Inspiration; being an Inquiry concerning the Infallibility, Inspiration, and Authority of Holy Writ.* By the Rev. JOHN MACNAUGHT, M. A. Oxon, Incumbent of St. Chrysostom's Church, Everton, Liverpool.

What God is, we can only know from what He has done. But His doings are found in mind and matter, in the moral as well as in the physical universe. It is only by looking to what is ethical in man, that we can judge at all concerning the true or the right in the government of God. Our conception of Deity must be evolved from within. It can only be corroborated from without. If the light which conscience has kindled is not to be followed, then we have no light. In that case, to reject a revelation could be no sin, inasmuch as all capacity for judging of its claims would be wanting.

But it is when passing from the mind of man, as constituted by the Creator, to its condition as depraved by circumstances and habit; and when passing from this disordered world within, to the no less disordered world without, that difficulty thickens upon us. Still, the highest conception we can form of the moral excellence possible to the nature of a man, is that which we should account as proper to him; and the highest conception we can form of the perfection possible to God, is that which we should account as proper to Him. Descartes was right—our capacity to conceive of Infinite Perfection must have come from Infinite Perfection. The capacity implies its object. The deity of human conception is not greater than the Deity who made us capable of that conception. It is such faith in God that must determine our faith in regard to any communication said to have come from Him. Whatever may seem to be at variance, either within us or about us, with such perfection in the Divine Being, must be a variance only in seeming.

2. But there is much in the spirit of our times to which the idea of inspired communications from God to man is very unacceptable. Religion, we are told by some, is a sentiment, not a creed. It has its seat in the emotions, not in the intellect. Its object may vary, but it is everywhere a response of the affections, and everywhere in substance the same. It is an instinct of our nature—we may say that of it, and that is about all we can say. To ask whence it comes is about as futile as to ask whence comes our power of seeing or hearing. Man is religious, as he is social, because he is a man, and the *because* in either case can be traced no higher.

But this trenchant kind of talk, like

much beside in the same quarter, consists, at best, of half-truths. It is a fact, that religion in man is thus necessary and indestructible; but it is also a fact, that the moral nature of man is something much above instinct, and that for this reason his religion should be regarded as something much above that mere brute tendency. It is true, the sentiment of religion is universal, while its objects change; but it is also true, that this change may be from false objects to true ones, and that the natural effect of this change may be to call forth pure sentiment in the place of the impure. The truth that the moral element in the objects of worship does much to determine the moral feeling of the worshipers, is elementary enough—but even this truth such men have to learn. So long as religious and moral truth shall be thus accounted as of little or no practical value, nothing can be more natural than that the idea of the intervention of the Deity to uphold and diffuse such truth by inspiring prophets and apostles for that purpose, should be utterly repudiated.

We must add, that the spirit in which the scientific studies of our age are often prosecuted is scarcely less one-sided than are the dreams of the sentimentalist. The one may seem to be all phantom, and the other all exactitude, but they have their tendencies in common. The spirit which underlies both is a self-sufficing spirit. It is a spirit which is content to be alone, and to be the regulator of its own ways. There is much to be done; but its fancy is, that whatever needs to be done it can do. Mistakes of all sorts may be inevitable, but mistakes natural to our condition are mistakes about which there need be no apprehension. So, too often, does the student of science choose his course. He is concerned with the laws of things, and with nothing more. He is busied among sequences, and ascends no higher. If he knows any thing of a Deity, it is of a Deity who is afar off. The universe is a great machine, its Maker has set it a going, and now he has only to look at it and to see it go. His interference with it, in any way, would be accounted an intrusion. It would be an attempt to amend his own work, which must imply imperfection. It would be to disturb the order which he has himself established. It would be, in brief, to undo what he has done. Miracle, accordingly,

is supposed to be impossible; or, if not impossible, it is hard to conceive of the amount of evidence that would suffice to establish it.

It is not easy to conceive of a habit of thought less favorable than this to the idea which regards truth as having come to man by a special inspiration from the Almighty. The gulf between such philosophical belief, and all Christian belief, is great. According to this philosophy, the Deity does not live with His creatures, but apart from them; and as a natural consequence, His creatures do not live with Him, but apart from Him. Having so far mastered the domain of physics, the investigator learns to reason upon the same principles from the material to the immaterial, and both mind and matter are brought under the same common law of forces. These forces are so adjusted as to connect penalty with many of the forms of moral wrong, but they do so only in part. To escape this form of penalty is to escape penalty altogether; and the chances of escape are many, and the expectations of escape are boundless. The laws of God are in the place of God; the man's concern begins and ends with these laws, and not with the law-maker. The natural issue is, that piety should come to be a particular form of prudence; and that religion, in its best state, should come to consist in selfishness refined and systematized into its worst. Men must unlearn such speculations—must see that physical laws are one thing, and the law written in the heart another, if they are to attain to any rational conception of moral government, and to possess any disposition to listen favorably to what may be said in favor of the doctrine of inspiration.

Men who see the condition of man in this light, of course belong to the class who regard the ethical intelligence of man as sufficient to his need as a religious being. This class embraces men who partake, in other respects, of a wide diversity of thinking. But wherever this opinion obtains, revelation in any special form is precluded as superfluous. The presumption is, that every man's best light must be supposed to be that which he brings with him into the world—that if the case be not so, the blame must be with his Maker, not with himself. What right men have to give law in this manner to the Creator, determining for Him what He may or may not do, never seems

to enter the thoughts of such speculators. Were they a little more mindful of the world of facts which bespeak man's great need of religious teaching, it might appear to them less unreasonable to suppose that, having permitted such a special exigency to exist, the Divine Being has adopted special means for meeting it. Certainly, if the book of nature be perfect, man's power to interpret it is not perfect. A thinker of the class under consideration has confessed, that the bulk of mankind, everywhere, must have "a well-defined, positive, somewhat dogmatic creed, deriving its sanctions from without." What is this but saying, that to leave men to nature is to leave them to an insufficient guidance; that to give them a revelation is to give them what they want. What the human intellect may imagine itself capable of doing when familiarized through its whole culture with Christian ideas, and what it has been found capable of doing where such ideas have been unknown, are not the same thing.

The pretense that there is no such certainty in history or in language as would be required to render a written revelation effectual, is a modern fiction which has grown up in a night and will wither in a night. It is an objection which proves nothing by proving too much. If our sacred writings must lose all authority on this ground, then all writings contemporary with them must lose authority for the same reason. If human language be thus worthless as having respect to religion, it is not easy to see how it should be valuable as relating to any thing beside. The common sense of mankind may be safely left to deal with such paradoxes.

An objection much more plausible is that founded on the law of progress said to be natural to the history of society. It is deemed unreasonable to suppose that a number of men in remote time should have been deputed to settle so grave a matter as religion for the men of all time. Physical progress in these later times has been wonderful. Its effect on general progress been wonderful. Is religion, then, the only thing that is to come to us stereotyped from the past? We answer—certainly not. Your laws of taste in literature and art have come to you from the past. Your psychology and your ethics have come to you from the past. You have not gone much beyond the an-

cients in these things, you have rarely risen to their level. May not the remote time when so much of this higher kind of truth was perfected have been the time when religious truth was perfected? May not the time when all that was most cognate with religious culture had thus ripened have been the time when religion itself was to be matured and fixed for ages to come? We are better chemists and better astronomers than the ancients; but, left to ourselves, should we have been better moralists or better religionists? There is at least room to doubt on that point. What is wanting to us, is not that Christianity should be other than it is, but that we should ourselves give proof that we know how to separate between those corruptions which the infirmities of past ages have incusted about it, and those hoarded treasures wherewith it waits to enrich the ages to come. Our modern world has much work to do before it will come into possession of the latent wealth that will be some day found in this ancient mine of thought.

In brief, what an enigma is man, on the supposition of his holding no intelligible relation to a hereafter! In his nature we see the mysterious—the enthroned power of conscience. This power requires that he should choose right as right, and avoid wrong as wrong; that he should be a creature of moral acts and moral intentions. He is a being, moreover, whose nature transcends the limits of the visible and the finite, and craves a place with the holy and the everlasting. If his only end be that he should live to the agreeable in this life, whence this waste of powers, and such a mockery of pure and earnest aspirations? Can we venture to charge the Just, the Wise, the Good, with having made His creature *capable* of a destiny so *high*, and *doomed* him to a destiny so *low*?

There is nothing valid, then, in the ground taken by those who deem it unreasonable to suppose that an inspired and infallible message has been addressed by the Creator to our race. Every thing rather combines to show that, improbable as it may be that any such communication should be made in our time, it is highly probable that something of the kind has taken place in past ages. Man's great need of such assistance is a strong presumptive evidence that it has not been altogether withheld.

3. It may not be unuseful to ask, at this point of our inquiry, what those features are which may be expected to characterize teaching coming to us by inspiration? It will of course be teaching that will assume that we need to be taught—to be taught what we do not know, and to be taught what we know in part more fully, and with more authority. It will suppose man to be capable of distinguishing to a large extent between truth and error, and between right and wrong, and to the individual responsibility of men as thus based its appeals will be made.

It is to be expected, moreover, in a communication of this nature, that much as it may reveal, it will leave much unrevealed, and that its tendency will be rather to *abate* difficulty than wholly to remove it. In every department of knowledge, what men know is little compared with what they do not know. We get our truth by glimpses, not by full manifestations. Our knowledge of the past is as nothing in comparison with our ignorance. Even of the present we know only the immediate. The nearest wave is visible—the ocean of billows which stretch off beyond it we see not. The multitude are observant of phenomena, the few only pass on to their causes, and to the secret place where the Cause affecting all causes doth work! Even the few can travel but a little way in that direction. The material and moral laws of the universe are, as we believe, everywhere the same: but what know we concerning the modes in which those laws are carried out in the numberless systems about us, or even in the planets of our own system? Those innumerable worlds have their relations to all space and to all time, but what know we, what can we know, of those relations? If the Being who has given existence to this universe, and who still rules it, should speak to men, we may be sure, from what we know of His ways, that the knowledge conveyed will be limited, relating mainly to our immediate moral necessities, and that he will often be silent where we could have wished Him to have been communicative. That the sacred writers have known where to stop, and that they have delivered their message so dogmatically and authoritatively, are among the most striking evidences of their inspiration.

We should also bear in mind, that a necessary effect of the coming of new



light on the path of man, must be not only to diminish the nearer darkness, but to make the more distant darkness visible. With us, the known everywhere loses itself in the unknown. Our light always dies away into its opposite. All things have their root in mystery, so that the more things we know, the more of mystery we know. This test to humility, and to the spirit of obedience, is inseparable from the condition of all creatures. In the experience of the highest of such existences, to believe in God is to bow in the presence of an infinite mystery. So it must be for ever. What we need is to be saved from sin, not to be no more beset with mystery. To this end, our great want is faith in God—faith in Him, grounded on what we know of Him, and warranting us to have faith in Him, when, from His thoughts being higher than our thoughts, His ways differ from our ways.

But the idea of an inspired *mind* is inseparable from our idea of inspiration. It consists in the Divine speaking through the human. Man is here a worker together with God. In its substance the message may be purely divine; in its manner of conveyance it must be in great part human. It is thus, in fact, in all departments of moral agency. In physical changes the elements themselves are wholly inert—the tendencies, or powers, which seem to belong to them, come wholly from the Creator. But in the mind of man there is a separate motive power, and a separate will, and while the rule of the world is from God, the men of it are free. Men may become blind to evidence—if they will; may harden themselves against goodness—if they will. Man may sin even in Paradise. Angels may sin even in heaven. On these grounds, it is reasonable to conclude, that if in inspiration there be much of God, there will also be in it much of man. The very elevation to which the mind is raised by inspiration, should be expected to bring out the human with special vividness and force. Whatever may be peculiar to the man, may be expected to give its impress to the message. What men are as men, everywhere gives the complexion to the moral systems which they devise, and to the Christianity which they profess. But if by reason of the moral freedom of man, the human does blend itself with the Divine in this manner up to the line where Divine influence becomes inspiration, the question naturally occurs

—Will not the human be present there also? Of course, the liability to err will be extruded. The purpose of inspiration supposes that much. But to almost any extent compatible with that principle, the human may be expected to be conspicuous, even in inspired utterances.

Nor should it surprise us greatly if, in the communications so made, the Deity should seem to concern himself with the small affairs of men no less than with the great. The small in creation is from Him as well as the great. He has bestowed as much elaboration on the one as on the other; and in His providence He cares for the one quite as truly as for the other. In ways innumerable He tells us that great and small is for us, not for Him. What He is as known to us through nature and providence, we should expect Him to be as known to us through inspiration.

4. Such considerations as the preceding must be kept in view by any intelligent man who would come to the question of inspiration in a condition of mind proper to such an investigation. It will be well, also, for such a man to mark the strong *presumptive* evidence in favor of the inspiration of the Hebrew and Christian Scriptures before directing his attention to the positive evidence relating to it. After all the objections that have been taken to the claims of the Hebrew Scriptures, there is much in their contents that can not be explained if those claims are not admitted. The views concerning the Divine Being, and the nature of religion, in those writings, are such as could never have originated with the Hebrew, and such as could not have been borrowed from any other people. What the Egyptians and the early Asiatic nations were in these respects, the Hebrews would have been had they been left to themselves. In general culture, they were, for the most part, below their neighbors. This phenomenon has been felt to be perplexing. Great pains have been taken in modern times, as in ancient times, to detract from its weight, by traducing the character of the Hebrew nation. Their writings, it is alleged, are not so ancient as we affirm—their theology was not so pure—their religion was outward and unspiritual, and their morals below the ordinary level, even in those times. Our answer is, that the Book of Job, the Psalms, and the pages of Isaiah, are a sufficient refutation

of such calumnies. It is true the character of the Hebrew nation was always below the special grandeur of their theology; and we see that they were with difficulty kept in any thing like a true allegiance to it. But what is the fair inference from these facts? Clearly, that if the Hebrews had been left to have originated their own theology, they would have originated something very different. Their lofty monotheism is as light opposed to the surrounding darkness—whence came it? What sort of its Divine attestations could have given it authority through so many centuries over such unwilling subjects?

The moral code of the Hebrews is scarcely less remarkable than their theology. The decalogue is some ten centuries older than the oldest system of ethics that has come down to us from the ancient world. But while thus before all such systems, it would be easy to show that it embraces the essence of them all. The first process of scientific intelligence in this field is, to collect facts; the last, to digest the material brought together, so as to give us a few great principles. But Greece was an outskirt of barbarism, when the Hebrew intellect was capable of this ripe service in the science of morals. Prudhon, a man of great power, and, we regret to add, no friend to Christianity, writes: "Even the number of the commandments of the decalogue, and their order, has nothing in it that is fortuitous. It is the genesis of moral phenomena, the ladder of duty and of crime, resting upon an analysis wisely and marvellously developed."—(*De la Celeb. Dim.* 17.)

The relation is intimate, between this scheme of ethics, so comprehensive and so spiritual, and the scheme of redemption, which forms the great subject of the Hebrew and Christian revelation. It is no marvel, indeed, that this scheme should recognize man as an offender, needing forgiveness and amendment. But it is marvelous that it should set forth the guilt and sin of man on such a scale, and that the restoration it contemplates should be so transcendent, and that the means by which it is to be realized should be so extraordinary. In all this there is a profound recognition of the greatness of human nature, which has no parallel in the history of merely human speculation.

Nor should we forget the lengthened interval through which this scheme is

kept in view, and brought into fuller and fuller development by a succession of prophetic minds. Its first announcement is in the first promise concerning the seed of the woman. And after the lapse of nearly four thousand years, the last of the Hebrew prophets takes up the strain in his proclamation of the near approach of the promised Messenger of the Covenant. Revolutions have come to the race and to empires, almost without number, but this word of the Highest sounds on and on through all those ages until it becomes a word accomplished. Was there no finger of God in all this? Must not the spirits of men have been enlightened, guided—*inspired*, to insure this elevation and unity of purpose?

If we pass the New Testament, we have to remember that our Lord came to the earth that he might bear unerring witness to the truth. But he does not appear to have committed any thing to writing. At the same time, it was of the greatest moment that record should be made of His sayings and deeds, and that this record should be strictly truthful. But how was this to be secured? Surely not by means of natural memory alone. The evangelists give us descriptions of scenes which they witnessed, and of others which they did not witness. They report sayings and discourses which they did not hear, or heard only partially. They do this many long years after their Divine Master had left the earth, and with a minuteness and literalness which must be fatal to them as witnesses at all, if they are merely human witnesses. In delivering such testimony as merely human witnesses, it would have behoved them to bear in mind their liability to err, and to have expressed themselves on many points accordingly. But they never do so express themselves. Their manner is uniformly that of men who were confident as to the accuracy of their representations. Doubt—hesitancy—there are no signs of such things in their writings. Their statements as historians, and their expositions as teachers, are all of the same positive complexion. Paul, who was as one born out of due time, shares in this feeling to the full. "The things I wrote unto you are the commandments of the Lord." If any man preach otherwise—"let him be accursed." In the writings of Paul alone, there are more than two hundred passages in which he expresses himself after this

manner concerning the teaching of himself and his companions in office. Now when these men so wrote, and so preached, there was no New Testament existing to which appeal might be made. Their authority, in relation to *fact* and *doctrine*, was strictly *personal*. Nevertheless, we see the unqualified positiveness with which they express themselves. We can understand this if we suppose those men to have been convinced that they were divinely guided—inspired, in relation to such matters; but on any other supposition their conduct is utterly inexplicable. In truth, it is not too much to say, that apart from the authority of the inspired writings, the mission of Jesus, beautiful as it was, must have died out of the memories of men after no long interval of time. The letter is not the spirit; but where the letter is not, the spirit will not be. If there be not inspiration in the Scriptures, then the only power adequate to the conservation of Christianity is that claimed by the Romanist—namely, inspiration in the Church. An ultimate authority of that nature there must be, or every thing becomes loose, and the temple crumbles into ruins. The presumptive evidence against the Romanist is strong, and the presumptive evidence against the merely human origin of the New Testament is not less strong.

5. The word "Inspiration" may be said to be a Scriptural term. It certainly is much more so than the word Trinity. Our concern, however, is with the fact, that the doctrine which the word inspiration is used to denote is a scriptural doctrine. The word—*θεόπνευστος*—"God-inspired"—is used in 2 Tim. 3: 16 to describe this special form of Divine influence. The doctrine, however, is conveyed by other words, quite as clearly and emphatically as by that word. The question is, Were the sacred writers under a *divine and unerring guidance* in what they professed to *approve and teach*? Are they to us, in this view, an infallible authority? if so, the more various the language in which the truth is taught the better. The indirect-evidence may often be among the most forcible forms of testimony in its favor. We are open to accept of proof in every form, and the word inspiration denotes the conclusion which has been thus realized.

We shall glance, in the first place, at the language of prophets of the Old Testa-

ment on this subject. The Hebrew prophets claimed to be heard and obeyed as men who spoke, not their own words, but "the word of the Lord." Their message did not originate with them, it came to them. In Exodus 4: 14-16, Jehovah says to Moses, concerning himself and Aaron: "I will be with thy mouth and with his mouth, and will teach you what ye shall do; and Aaron spake all the words which the Lord had spoken unto Moses." Here we have the action of the Divine upon the human, in the full sense of an inspired guidance. So early did the idea of inspiration become familiar to the Hebrew mind. Again; Deut. 18: 20, et seq.: "But the prophet which shall presume to speak a word in my name which *I have not commanded him to speak*, or that shall speak in the name of other Gods, that prophet shall die. When a prophet speaketh in the name of the Lord, if the thing follow not, or come not to pass, that is the thing which *the Lord hath not spoken*." Prophets accordingly, were men who were not merely self-moved, but God-moved, in their utterance. They were to speak strictly as the Lord had spoken. What is asserted in this form from time to time in the Old Testament Scriptures, comes to be in the aggregate a testimony to the whole. "Who is he to whom the mouth of the Lord hath spoken, that he may declare it?" Jerem. 9: 12. And then follows a series of verses beginning with the formula—"Thus saith the Lord." In other parts of the same prophet we read "Hear ye and give ear, be not proud, for *the Lord hath spoken*"—"and these are the words that *the Lord spake* concerning Israel and concerning Judah." "The word that *the Lord spake* against Babylon, and against the land of the Chaldeans, *by Jeremiah the prophet*." "The Lord hath both devised and done that which *he spake* against the inhabitants of Babylon."\* This language, thus recurrent in Jeremiah, is the language of all the prophets. Furthermore, the instances are almost endless in which the prophets speak of the word of the Lord as *coming* to them, and as *given* to them.† If the passages referred to below be consulted, they will suffice to show what the

\* Chap. 13: 15; 30: 4; 4: 1; 41: 12.

† 1 Kings 12: 22; 1 Chron. 17: 3; Jeremiah 7: 1; 11: 1; 17: 1; 26: 1; 27: 1; 30: 1; Isaiah 1: 2; Ezek. 3: 4-11; Hosea 1: 1; Malachi. 1: 1.

manner of the prophets is on this subject. Now the Divine Being intended that these men, by the all but perpetual use of this language, should convey to the mind of the Hebrew people that a prophet's message was not his own, but from the Lord—or he did not so intend. If such was his intention, then the question of inspiration is settled. If such was not his intention, then it is not merely inspiration that must be surrendered, but revelation in any sense. The prophets not only cease to be prophets, they become knaves, or imbeciles, or a mixture of both.

We shall now look to the New Testament, and see how far its verdict may be said to be in favor of this asserted inspiration of the Old. It should be remembered that the Jews believed in the plenary inspiration of their Scriptures—the *teachings* in the books of Moses, in the Psalms, and in the prophets, was everywhere to them of Divine authority. Their appeal to Scripture was precisely such as evangelical Protestants have been wont to make. It is important now to observe what our Lord's manner was in this respect. We find, then, that our Lord often makes his appeal to the Old Testament as a decisive authority. "Have ye not read that he which made them at the beginning made them male and female?" Matt. 19 : 4. This is a piece of *history*, but to have read it in Genesis is to have read what all men should believe. "But as touching the resurrection of the dead, have ye not read that which was *spoken unto you by God*, saying : I am the God of Abraham, and Isaac, and Jacob?" 22 : 31, 32. This, again, is a piece of *history*; but to have read it as sacred history is to have read what, in the view of the Saviour and of his hearers, should be regarded as true. If language can have any meaning, the meaning of this language must be, that to "read" what is taught in Old Testament Scripture, and in Old Testament history, is to read what is truthful—ours on authority from God. So in the history of the Temptation, Our Lord replies to the Enemy in the fourth verse—it is written; in the seventh verse—it is written; in the tenth verse—it is written. In all these sentences, it is Old Testament Scripture that is cited, and cited as an infallible and ultimate authority. Often does he remind the people about him of what Moses had commanded, or had said, strictly in the manner of a teacher who recognized in

Moses an authority to whom all should submit. "Had ye believed in Moses, ye would have believed in me, for he wrote of me. But if ye believe not his writings, how shall ye believe my words?" John 5 : 46, 47.\* He speaks of Isaiah, of David, of Daniel, of Jonah, of Hosea, of Zechariah all as prophets—that is, as men whose word was the word of the Lord.† It is concerning the writings of the received canon of the Old Testament that Our Lord speaks, when he says, "Ye do err, not knowing the Scriptures (τας γραφάς) nor the power of God." Much does he say to the same effect. "Did ye never read in the Scriptures—the stone which the builders rejected the same is become the head of the corner?" Matt. 21 : 42. "Search the Scriptures—they testify of me." "Thinkest thou that I can not pray to my Father, and he shall presently give me twelve legions of angels? But then how shall the the Scriptures be fulfilled, that thus it must be?" Matt 25 : 53, 54. "O fools and slow of heart to believe all that the prophets have spoken; ought not Christ to have suffered these things, and to enter into his glory? And beginning at Moses and all the prophets, he expounded unto them, in all the Scriptures, the things concerning himself." Luke 24 : 25–27. Again : "Then opened he their understanding that they might understand the Scriptures." 45. Here we have the exact manner in which the Jews were accustomed to speak of their Scriptures, believing them to have been divinely inspired; and in which we are ourselves accustomed to speak of them, believing the same thing concerning them. Sometimes the singular term, *Scripture*, is used, sometimes the plural term, *Scriptures* : both terms are significant. They suggest that the canon, while made up of parts, is one.‡ Our Lord speaks of this collection of writings as consisting of "the Law and the Prophets." He also speaks of it as threefold—"that all things might be fulfilled which were written in the Law of Moses, and in the Prophets, and in the Psalms, concerning me." Luke 24 : 44. Josephus, describing the writings of the Old Testament, as they were regarded by the Jews, says : "Five

\* Matt. 8 : 4; 19 : 8; 23 : 2, John 7 : 19–21.

† Matt. 7 : 17; 12 : 17–38; 13 : 35; 15 : 7; 21 : 16, 42; 22 : 43; 26 : 13.

‡ Matt. 7 : 38, 42; 13 : 18; 17 : 12.



are the books of Moses, which contain the laws, and the declaration concerning the origin of mankind down to the time of his own death.—*Contra Ap.* lib. 1, § 7, 8. This was the received opinion in regard to the origin of the Pentateuch, and its relation to the other Scriptures of the Old Testament, which our Lord would be assuredly understood as confirming in the above language.

So strong is this chain of proof in regard to the inspired authority of the Old Testament, that some men have not scrupled to say that our Lord accommodated himself in this matter to popular prejudice, though he knew it to be founded in error. The impiety of this pretense places it beyond the pale of argument. Of course these gentlemen know it to have been the manner of the Great Teacher to be thus tender toward Jewish prejudice, and thus careful of his own popularity; and that regulating his course so as to avoid popular disaffection, it was avoided!

While such was the language of our Lord on this subject, what was the language of the writers of the New Testament? Do they appeal to Moses and the Prophets after this same manner? Assuredly they do. "Men and brethren," says Peter, "this *scripture* must needs have been fulfilled which *the Holy Ghost by the mouth of David spake* concerning Judas." Acts 1: 16. Again, says the same apostle, "those things which *God hath showed* before by the *mouth of all his holy prophets*, he hath fulfilled." Acts 3: 18. Hence the language of the Church at Jerusalem—"Thou art God—who *by the mouth of thy servant David hast said*, Why do the heathen rage?" Thus it was God who spoke through the prophets—through them all. In his second epistle, Peter writes, (1: 19–21,) "We have also a more sure word of prophecy; whereunto ye do well that ye take heed, as to a light shining in a dark place, until the day dawn and the day-star arise in your heart; knowing this first, that no *prophecy of Scripture* is of any private interpretation, for the prophecy came *not* in old time *by the will of man*, but holy men of God *spoke as they were moved by the Holy Ghost*." The word from the Old Testament was "sure," for the reason assigned. The word of the New Dispensation was still more sure, as being the fulfillment of the Old. By "*prophecy of Scripture*," we must understand *written*

prophecy; and by prophecy concerning the dispensation of the Spirit, we must understand prophecy relating both to the advent and the works of Messiah. Hence the words of Zacharias, the father of the Baptist, blessing God in that "He had raised up a *horn of salvation* in the house of David, as He *spoke by his Holy Prophets, which have been since the world began*." The advantage to Timothy of having known the "Holy Scriptures" from his childhood was, that they were able to make him "wise unto salvation." So were the Scriptures of the Old Testament given, and to this end were they given.

In connection with Paul's language to Timothy, just cited, is the well-known passage: "All *Scripture is given* by inspiration of God, and is profitable for doctrine, for reproof, for correction, for instruction in righteousness, that the man of God may be perfect, thoroughly furnished unto all good works." 1 Eph. 3: 16. The "*all Scripture*," or "*every writing*," referred to, is the sacred "*writing*" of the Jews, as distinguished from all merely human writing; and of Scripture in that sense, this affirmation is made. Some, indeed, read "*all Scripture is inspired, is profitable*," etc. —not "*all Scripture is by inspiration of God, and is profitable*," etc. But if the verb be not introduced, the conjunction is used as it is not used elsewhere in the New Testament; and we hold to the rendering which our translators have adopted. In this view the passage affirms the inspiration of the whole of the Old Testament; and even in the other, it affirms that there is an inspired element running through it, and an element profitable to all the important ends enumerated. The language of Paul in other connections is such as to show that his language in this instance should be interpreted in the largest sense. "What advantage, then, hath the Jew? Much every way, chiefly because to them were committed the *oracles of God*." Rom. 3: 2. There was not a Jew in the world who would not have understood these terms as an affirmation of the inspired authority of the whole of the Old Testament. He would have known nothing of any distinction between inspired and uninspired in that record. The uses assigned by this apostle to the Old Testament Scriptures in 1 Tim. 3: 16, are in substance the same that he has assigned to them in Rom. 15: 4. "For *whatsoever things were written aforetime*,

were written for our learning, that we, through *patience and comfort of the Scriptures*, might have hope." It is true the apostle does not here say that those Scriptures were inspired to these ends, but what, short of inspiration, could have given them their perfect adaptation to such ends? The strict reading of the passage would be—"for *every thing* that was anciently written, was *written for our instruction*." Fully to the effect of this passage is 1 Cor. 10: 11. "Now, all these things happened to them for ensamples, and were written for our instruction." So that even the historical Scriptures have been inspired with a view to our learning and improvement. We might cite many passages in which the New Testament writers cite the Old Testament as being the understood utterance, not of man, but of the Holy Spirit. "*Well said the Holy Ghost* by Esaias the prophet unto your fathers." "*As the Holy Ghost saith*, to-day, if ye will, harden not your heart." "*The Holy Ghost thus signifying* that the way into the Holiest of all was not yet manifest." "Wherefore, also, *the Holy Ghost is to us a witness*, for after that *he had said*," etc. In short, so thoroughly is the New Testament founded on the Old, that there are more than 450 references in the later Scriptures to the authority of the earlier. So much for the alleged indifference of the apostles to historical antecedents and historical proof!

But if the testimony of our Lord to the inspired authority of the Old Testament was such as we have seen, it is reasonable to expect that His testimony will be no less decisive in reference to the men who were to be the first preachers of His Gospel, and were to give it the form in which it was to be known to the men of all time to come. The New Testament is the development of the Old. It gives the same theme, but with greater clearness and greater fullness. The presumption is, that the Divine guidance would, in this case, be greater—and it was greater. The passages from the lips of our Lord bearing most on this subject will be found in John 14: 16, 17, 26; 15: 26, 27; 16: 12, 13. According to these Scriptures, the Holy Ghost was to be given to the disciples, to teach them all things, and to bring all things to their remembrance. Of course, we are not by these words to understand "all things" in the most absolute sense. But we do

understand these words as denoting all things necessary to a clear and full knowledge of the religious truth which it was the object of the Saviour's mission to lodge in the minds and hearts of men. As teachers of this truth, whether orally or in writing, they were to become unerring and competent guides. It has, indeed, been said, that nothing more was intended by this promise of the Saviour than that the effect of the active service to which the disciples would be called after his resurrection would be to give them a clearer and a more healthy state of mind wherewith to look to the past and the present; but this is so pure a piece of fantasy as not to be entitled to refutation.

We have still to look to the manner in which the New Testament writers express themselves concerning their own authority. Do they claim to be persons under a Divine guidance in what they teach? The very name—apostles—by which they are most of them distinguished, seems to suggest something of this nature. An apostle is one sent—sent by a competent authority, and for a definite purpose. In this case, every thing seems to say that the person sent must be supposed to have been qualified to discharge the trust committed to him with the strictest wisdom and fidelity. We have to place ourselves in the circumstances of the first Christians, and then to imagine a document coming to us, beginning with these words: "Paul an Apostle of Jesus Christ, by the will of God." Our first impression on hearing these words, we conceive, would be, that a wise and good man so writing must be possessed of a special claim on our submission—a claim fully to the effect of what might be founded on inspiration. "The word of God which ye have heard of us, ye received, *not as the word of man*, but as it is in truth, *the word of God*." 1 Thess. 2: 13. "He therefore that despiseth, despiseth not man, but God, *who hath given unto us His Holy Spirit*." Ibid. 4: 8. "If any man obey not *our word* by this epistle, note that man, and *have no company with him*." The authority thus claimed was special and exclusive, and could have been claimed only upon special and exclusive grounds. This idea is strongly conveyed in a text before cited. "If any man think himself to be a prophet or spiritual, let him acknowledge that *the*

things that I write unto you are the commandments of God." 1 Cor. 14: 37, 38. In other words, "My authority is ultimate with you—I have it from God." John writes to the same effect: "We are of God. He that knoweth God heareth us; he that is not of God heareth not us. *Hereby know we the spirit of truth and the spirit of error.*" 1 Eph. 4: 6. The language of Peter is no less decisive. "That ye may be mindful of the words that were spoken before by the holy prophets, AND of the commandments of us, the Apostles of the Lord Jesus Christ." "Even as our beloved brother Paul also, according to the wisdom given unto him, hath written unto you. As also in all his Epistles, in which there are some things hard to be understood, which they that are unlearned and unstable wrest, as they do also (*τὰς λοῖπας γράφας*) the other Scriptures, to their own destruction." Here, obedience to apostolic authority is the test of truth. There is no cognizance of Christian character without it. The commandments of the apostles are placed on a level with the utterances of the holy prophets; and Paul's writings were "Scriptures" in the sense in which the other sacred writings were "Scriptures." Need we say more? It is true, Paul speaks of giving instruction in one instance without having commandment of the Lord so to do. But allowing the construction sometimes put on this language, the reference is clear, that when the apostle does not make any such exception in his teaching, he is to be understood as speaking because he *has* such commandment.

Supposing the apostles to have been inspired, in the sense commonly understood among us, what language could have been more natural and proper than that we have cited? Supposing them not to have been under such influence, what language could have been more unnatural—improper? It should be remembered, moreover, that the passages we have adduced are merely samples—a small selection from the great mass which it would be easy to have presented.

All we have hitherto said has been intended to bear upon the FACT that the Hebrew and Christian Scriptures are inspired. We have now to inquire concerning the NATURE and EXTENT of this influence. And we shall, perhaps, best accomplish this object by looking first to the

negative side of the doctrine—marking what it does *not* necessarily include.

1. The plenary, or full inspiration of the Scriptures, does not oblige us to suppose that all the *words* of the Scriptures are inspired. This was the case, probably, in some special instances. Thus, the precepts of the decalogue are said to have been written by the finger of God. Whatever this language may mean, it must at least denote strong peculiarity as regards that portion of the Divine record. And some such peculiarity may be supposed to have extended to the announcements made concerning some of the more special and spiritual facts of revelation. But these instances do not appear to have been frequent. It is true, inspired men are said to deliver the "word" of the Lord, and the "words" of the Lord. But Christ himself was the "word" of the Lord. In what sense? Clearly as being the expression of the *mind* of the Lord to us. Our Lord says: "The words that I speak unto you, they are spirit and they are life." Did he mean to say that the particular terms he had used were spirit and life, or that the truth conveyed through those terms was possessed of such power? "This is the word," says Peter, "which by the Gospel is preached unto you"—that is, the Gospel is the *word* of the Lord in the sense of being the *truth*, the *mind* of the Lord. In this discussion much importance has been attached to 1 Cor. 2: 13: "Which things also we speak, not in the words which man's wisdom teacheth, but which the Holy Ghost teacheth." Here the words taught by the Holy Ghost stand in contrast to the words taught by human wisdom. Now what is meant by this teaching of human wisdom? Does it mean the teaching of mere words? The reference, it is clear, is not so much to mere words as to language, style, manner in the largest sense—to the literary, elaborate, and artistic style of oratory and authorship, taught by the philosophical schools of those times. The meaning accordingly is, that the influence of the Holy Spirit, in so far as it was present with the apostles in relation to their manner as teachers, was with them to dispose them toward the simple and natural manner becoming their function; not for the purpose of giving them, word by word, the terms they should use, not to qualify them for emulating the artificial, ornate, and rhetorical style observable in the secular

authorship and oratory of that day. There *was* a Divine influence which affected their manner as teachers, but it did so by affecting their character as *men*, imparting, through that medium, to every thing they did the signs of sincerity and nature.

Had inspiration extended to the words of Scripture, it would have been extended with the same minuteness and precision to the circumstances of Scripture. In that case the alleged discrepancies and contradictions, on which skeptics have dwelt with such plausible exaggeration, would have been unknown. In the Scriptures we have substantial identity, but we have it along with great verbal and circumstantial variety. An influence which should have allowed no variation from fixed terms, would have allowed no variation from fixedness in any thing.

Furthermore, we feel bound to say, if this verbal theory, as it is called, be just, then translations of the Scriptures are not the word of God. If the inspiration be in the words, the original words are gone when the translation is made. It is true, an attempt is made to put equivalent terms in the place of the original terms; but every scholar must know that in many cases this is not possible. All books suffer by translation, inspired books as much, and even more than others. If the inspiration of Scripture be an inspiration of *truth*, then we may have the Bible in English; but if the inspiration be shut up to fixed terms, then we have it not, no living people have it, or ever can have it. Which, now, is the most probable, that God should have given us a Bible adapted to the people of all languages and all time, or a Bible adapted to the people of one language only, and of one long past period of time?

It is to be remembered, also, that the New Testament writers do not cite the Old Testament with verbal accuracy, and that they often cite the Greek of the Septuagint, which was not inspired, in preference to the Hebrew, which, as this theory supposes, was inspired. If the Jews were believers, as is alleged, in verbal inspiration, it is plain the evangelists and apostles did not mean to be understood as encouraging them in such a belief.

To abate the objection made to this theory, it is sometimes said, that men, of necessity, think in words, and that on this

principle the words as well as the thoughts come to be inspired. But the fact is not so. We do often think without words. In the history of language, it will be found that thought goes before words, and is the creator of them. It is as the thought of a people expands and becomes manifold, that their language is found to take compass and manifoldness according to their needs.

But in fact, the difference between the professed advocates of plenary inspiration, and verbal inspiration is by no means so great as the parties often seem to imagine; for the advocates of the verbal theory do not deny the varieties in diction, style, and other characteristics by which the sacred writers are distinguished from each other. They admit and admire these varieties; they say God did not unmake the *man* when he made the *prophet*, but rather consecrated the man, with every thing belonging to his individuality, to his special function. But if this individuality belongs to the man before he is inspired, surely that can not be said to be the fruit of inspiration which exists before inspiration comes. In that case the natural individuality may become an inspired individuality in the sense of being guided by inspiration, but it can not be an inspired individuality in the sense of being created by inspiration. Both parties are agreed in the fact, that the Holy Spirit adopts, uses, consecrates the characteristics of the man to his special object; the difference here is really a difference more about modes of expression than about ideas. When the advocate of the verbal theory cedes thus much, all that seemed to be distinctive of his doctrine is virtually gone—and thus much he is obliged to cede.

2. Our next remark is, that belief in the full inspiration of Holy Scripture does not require us to suppose that the inspiration was always the *same*, either as to its *mode* or *measure*. Inspiration is a form of miracle, and the Divine Being does not resort to miracle without occasion, nor beyond occasion. If there be inspiration at all, it will always be sufficient for its purpose, and it will be always determined by its purpose. Being so regulated, it may be an influence acting at one time upon one faculty, at another time upon another, and upon occasions on the whole susceptibility of the man, both mental and physical. Nothing can be



more reasonable than to suppose that the cause in such cases would be limited to the intended effect. The contents of the Scriptures sustain this view. Much that we find there could be recorded as the effect of purely natural memory; while much beside is of such a nature as to imply the presence of the supernatural in the highest degree. Surely Paul did not need to be inspired after the same manner when requesting that a cloak which he had left behind him should be brought to him, and when predicting the great apostasy, and the revelation of the Man of Sin. His natural memory gave him sufficient warrant to assert, that after his conversion he went for a time into Arabia; but something greatly beyond the merely natural is needed when he proceeds to speak of the time, and the order, and the characteristics of the resurrection. That any man should insist that the inspiration in these different cases was really and necessarily the same, is to us a great marvel. So it has been also to the great majority of the wisest and holiest of men who have bestowed their thought on this subject. Baxter and Doddridge, Stennet and Parry, Pye Smith and Hartwell Horn, Knapp and Dick, Wilson and Henderson, are all among heretics, if there be heresy in the opinion that there were differences of degree and of mode in the influence we intend by the term Inspiration. It is to us very plain, that whatever may have been the comparative passiveness of the mind of the sacred writers in some special instances, in general their communications are made in the full exercise of their intelligent and spiritual consciousness.

*Prophecy*, and the facts which constitute the special doctrines of *Revelation*, must have come to the mind of man through the highest form of inspiration. To see the end from the beginning belongs to Omniscience, and from the Omniscient alone can the spirit of prophecy come. The special doctrines of *Revelation*, too—the Incarnation, the Atonement, and the office of the Holy Spirit—are all facts which belong to the supernatural. Reason may approve the ends which these facts are designed to subserve, and may admire the facts themselves viewed as means to such ends, but reason could never have discovered that the Divine Being would come forth after this manner to redeem and save his creatures. Reason may teach us something concern-

ing the nature of the Divine perfections, but that they would come into act after this manner reason could never have foreseen. These are the things which it had not entered into the heart of man to conceive, but which were *revealed* to the apostles by the Spirit. These are the things which Paul received, not of man, but by *revelation* of Jesus Christ. These are the things which in other ages were not made known to the sons of men, as they were afterward "*revealed* to the holy apostles and prophets by the Spirit." The apostles could have known nothing of these facts except by *revelation*, and their report to us concerning them could not have been wholly trustworthy, except as the influence which came upon them sufficed to constitute them unerring guides. This highest form of inspiration was needed to fit them for receiving this truth fully, and for communicating it without any mixture of error.

Next to inspiration, in the way of direct revelation, we place that of *Divine Guidance*. Our Lord promised the Comforter to "lead" (*ὁδηγήσει*) the apostles into all truth. What they remembered but imperfectly, and apprehended but imperfectly, they were to remember distinctly, and to see distinctly, and so to become qualified to teach and to record all the truth necessary to the common salvation. In all this they are led, not forced. Each man remains himself, but each is sufficiently guided to become to us a sufficient authority; John 16 : 13.

These "revelations of the Lord," and this leading of the Holy Spirit, no doubt included a special *purification* and *elevation* of the powers of the mind. The natural capacities of the mind were cleared and invigorated by rich spiritual influences. The spiritual man was made to see spiritual things as such men only can see them. The apostles confess to many personal infirmities, but as preachers of the revealed truth they claim to be "sufficient" to their work—to have "sufficiency of God."

The most limited sense in which the term Inspiration can be used is, as denoting mere *superintendence*. In many connections, the influence that should guard against error was all that could be needed. But even such portions of the Sacred Writings may be justly described as the word, not of men, but of God, inasmuch as the Spirit of God is supposed to be

constantly present to insure correctness. The man acts with his natural freedom, but the Holy Spirit insures that, in all these modes, truth only shall be taught, and error be precluded.

3. We are not obliged to suppose that minds alike inspired must of necessity see the great scheme of revealed truth from exactly the same *point of view*, and under exactly the same *lights*. Circumstances would arise which would dispose such minds to look at the parts and tendencies of the revealed message differently at different times. Its particular aspects, as opposed to particular errors, would naturally come into prominence according to the exigency. This feature is observable throughout the sacred writings. The passing incidents of days far remote have fixed their impression on the sacred page for all days to come.

But, beyond this, the influence which left the sacred writers to differ from each other so much in style and general manner, left them free to differ in some things more considerable. The epistles of Paul and those of John give us the same Gospel, but not as seen from precisely the same point, or with the same truth and lessons in strictly the same prominence. John's sympathies lie more with the contemplative and the devotional. Paul's thoughts take in a wider range of doctrinal truth, and are busied with the more robust and practical tendencies of the Christian system. Peter and James, again, were alike inspired, that they might hold and teach the same truth; but they do not teach it after the same manner, nor with the same parts in exactly the same proportions. In James, the doctrinal element is briefly given; it is to the practical that he aims to give clearness and force. Peter combines the doctrinal more freely with the practical, but we become sensible to a beautiful variety in the manifestations of the same truth, as we compare the epistles of Peter, and Paul, and John.

So it is with the evangelists. If each had been the exact duplicate of the rest, then three must have been superfluous—one would have sufficed. But grave objections have been taken to these narratives by skeptics, on the ground that the Christ presented in each is not so much the same as another. This objection is of no weight. We feel that we do not get our full conception of the character of our

Lord from any one of the evangelists. To this end we need to read and collate them all. The evangelists, it is clear, were not obliged to look on the character of the Saviour from strictly the same ground. One might look on that marvelous life more in its external manifestations; another might be more intent upon its inner mysteries; and the two may have had their mission to do between them the work needing to be done. Be it remembered, too, that these natural varieties in the character of the men employed to write the Scriptures, are varieties that will never cease to have their counterpart among the people and nations anticipated as readers of the Scriptures. In this way, not only does each mind get, if we may so speak, its own truth, but gets it in its own way. The inspired writers are allowed to manifest these individualities because they are such as will never fail to be common among men. The Divine Wisdom here tells us that it is not in the one mode of any one of the sacred writers that we have what is best, but in the varieties of mode embracing them all. In these varieties we have the destined fullness of Scripture—in these parts we have the whole.

4. If even in their mode of presenting moral and religious truth the sacred writers are thus distinguishable from each other, it is easy to suppose that their manner of describing the same *historical circumstances* may partake of difference. We can easily imagine that one historian would be especially interested in one aspect of a story, and another in another. The feeling awakened, or the lesson suggested, by almost any incident, will hardly be the same in the experience of any two observers. Hence we can suppose that the feature of an incident almost overlooked by one writer will often be that specially dwelt upon by another. In this way there might be a great circumstantial variety, verging upon seeming contradiction, while in fact there is no contradiction, but merely variety. All this flows naturally from the fact that the Holy Spirit does not supersede the individuality of the sacred penman, but adopts it.

5. It is, we think, quite legitimate to say, that the idea of inspiration does not require us to suppose that the historical statements of the Scriptures will always be given in exact *chronological order*. History, in the philosophical and scientific

form familiar to us, was little known among the ancient Asiatic nations. The writings of this nature possessed by them were singularly fragmentary, consisting for the most part of brief entries made from time to time in courtly or priestly registers. The marvel with us should be, not that the ancient Hebrew histories bear so small a resemblance in chronological arrangement to the classical models which have been handed down to us, but rather that the fragmentary and irregular are not more observable than we find them. We do not believe that the inspired writers have given us false dates, or false relations of cause and effect, but where the order of occurrences was of no moral or religious significance, they often appear to have been indifferent about it. The Jewish modes of computation were not ours, and much apparent discrepancy has arisen from this circumstance. The Hebrew manner of notation, too, was not favorable to strict accuracy on the part of transcribers.

6. It does not follow that where there is inspiration at all, it must be inspiration in regard to *all truth*. Each prophet in the old time had often his special message to deliver, and that being delivered, his work for the season was done. Holy men spake as they were moved. They proclaimed the word of the Lord as the word *came to them*. It is said of our Lord that the Spirit was not given by measure to him; but that is not said of another. Even in his case, though the Spirit was given him without measure, his teaching was measured. He gave forth truth to his disciples by little and little, as they were able to bear it. On this same principle did the All-Wise deal with our race in the earlier ages of the world. He gave to the patriarchs and to the Jews the truth convenient for them. But to put limit after this manner to the communication of truth is not to teach untruth. The light given, in so far as it comes, is pure light. The inspiration of the Old Testament Scriptures was as real as the inspiration of the New Testament, though its purpose was not to present truth with the same degree of clearness and fullness.

Nor does it follow that the man inspired at one time must be an inspired man at *all times*. The gift was not perpetual. Balaam was inspired once, but we have no reason to suppose that the same influence ever came upon him again. He

had his vision as he looked on the tents of Israel from beside the altars of Moab; but, that vision closed, the future was as impenetrable to him as to that King Balak who had sought his services.

Not less manifest is it, that the inspiration which insured unerring truth to the message of the inspired person, did not necessarily insure the unerring to his *conduct*. Balaam could prophesy, but we know how he could sin. David could breathe forth the soul of an inspired devoutness; but we know how much there was at variance with that spirit in his life. And what shall we say of Jonah? Even Peter, constantly inspired as he was as a teacher of truth, could so err that Paul felt bound to reprove him as one who was to blame.

We have seen in the preceding sections what inspiration does *not* necessarily include. The question now comes, In what does it really consist? We have seen what it is as regards its differences in degree, and, in some sense, in kind. In any, or all of these forms, its object is the same—viz: *to insure truthfulness*. This we believe it does insure, not merely as regards religious and moral truth, but as regards all the matters on which it professes to be a *teacher*—professes to *give us the truth*.

We have delivered our thoughts concerning what is called verbal inspiration. The alternative which now demands our attention lies between a *plenary* and a *partial* inspiration. Plenary inspiration covers the whole substance of the Bible, regarding all that the sacred writers profess to teach, as taught under a Divine guidance, and as taught, in consequence, unerringly. The theory of partial inspiration restricts this influence to the moral and religious truth inculcated, leaving every thing else to be accounted as merely human, and as liable to be disfigured by the errors incident to what is simply of man. That both these theories have their difficulties will be admitted, we conceive, by every intelligent and candid man. The theory of plenary inspiration has to be harmonized with many alleged discrepancies and errors in relation to history, geography, and natural science generally, which some men insist are of such a nature as to be fatal to any such views of this doctrine. The theory of partial inspiration, on the other hand, which restricts this influence to religious and moral truth,

entails the difficulty—in our judgment, the impossibility—of separating between the truth thus said to be from God, and the error from man that must be inseparable from the mass of material with which it is mixed up.

Let it be supposed that time has not been without bringing its obscurities and injuries on some portions of the sacred text, which is the most credible idea—that which regards these records as originally truthful throughout, though now injured in some unimportant degree by the action of time; or that which supposes that the Divine truth in these records has been allowed to be admixed from the first with all sorts of human error, the task intended for man being the difficult, if not the impossible one, of separating God's truth from man's untruth? To us, the first of these ideas is immeasurably more admissible than the second. That the Divine Being should not have interposed, as by a perpetual miracle, to secure the absolute purity of the sacred text, amidst the revolutions of some thirty centuries, is to us no difficulty, compared with the supposition that the Bible, while clearly intended for the hands of the people, is a book from which these people are expected to abstract the religious essence, free from all the other, and the very different essences which have not only become incrustated upon it, but have entered into it, and in a thousand ways become parts of itself.

The secluded scholar may imagine, that to him a Bible with no more than the religious element inspired would be all he could desire. But the world is not made up of secluded scholars. Such men are exceptions. The race is made of other stuff, and is otherwise conditioned. To test this partial inspiration theory, we have to conceive of it as becoming the popular theory. In this case, the people who now regard the historical in the Scriptures as being no less trustworthy than the theological, have to abandon that dream. Old Testament history and New Testament history drop at once from their special place, and find their level beside the ordinary chronicles and histories of nations. If no more inspired than they, why should they be more truthful—why more respected? Imagine, then, the partially educated, the uneducated, the artisan, and the peasant, taking up the Scriptures with this new conception of them—

their history—the histories given by the evangelists among the rest—being no more than ordinary human compositions, disfigured by all the traces of ignorance and mistake common to such merely human productions. Would not such minds feel that, in losing their former conception of the book, they had lost the book itself? Would not the feeling of uncertainty thus awakened in reference to so large a portion of the volume soon extend itself to the remainder, especially as the difficulty of separating between the two should come to be more and more felt? What avails it that the history is full of moral and religious lessons, if the history itself may be untrue? In fact, if the veracity of the narratives of Scripture shall break down, every thing breaks down. Where the untrue ends and the true begins no one can tell. It may be easy to discourse about Noah, and Lot, and Abraham, and the rest, but if all that Genesis gives as the history of such persons be mere tradition, impregnated with the errors that must have been inseparable from such traditions, where can be the worth of such discoursing? If the facts which make up the supposed lives of these persons be uncertain, can the lessons said to be supplied by those facts be other than uncertain? If the foundation be thus loose, what must be the fate of the superstructure? These are questions which the commonest minds would soon begin to ask, after their own manner, on the supposition that the historical in the Bible is a matter of merely human authority. The doctrine which would thus leave us without a revelation, can never have come from revelation. A book designed by the All-Wise for popular use can hardly be of such a complexion as to render it impossible that the people should make a wise use of it. Nothing can be more repugnant to the common-sense of the common mind than the idea of a revelation from God consisting partly of the true and partly of the untrue. Let the preacher bring them to believe that, and he will soon find that he has put them in a way to dispense with his services. The men who hold this doctrine seem to be suspicious that such would be the effect of preaching it; and can that doctrine be sound of which this may be affirmed? It is felt to be safe for the few only, unsafe for the many. Can this be the test of truth on such a matter? If it be a truth,



it is a truth of so much importance that the preacher should spare no pains to place his people in full possession of it; his silence on this point must bespeak distrust of his own doctrine. Mr. Macnaught has cited several living bishops as holding this partial inspiration doctrine, and the following extract shows how men of a skeptical tendency are likely to estimate such concessions:

"So, then, according to the confessions of the rulers and overseers of the English Established Church, there may be errors of science, of history, and of morality in the Bible; but still the idea of Scriptural Infallibility, on matters of religion, must be maintained. Now, 'the learned' few may be able to perceive the nice distinctions between the religious, and therefore infallible, sections of the Bible, as contrasted with its non-religious, and therefore fallible sections or meanings; but the unlearned many will surely not be able to perceive distinctly these shades of difference.

"If, on the ground of these recognized and palpable errors in the science, history, and morality of Scripture, our bishops had said clearly and intelligibly, that the Bible was, however excellent, yet a fallible book, we should have admired their clear-sightedness and their courage even more than we now do; but, as it is, our ecclesiastical rulers seem to confess a great part of the truth, and then to stop short, and suddenly uphold the idea of religious infallibility being in a fallible book.

"We see the meaning of this distinction, and we can sympathize with the natural timidity of these dignitaries; but we can not help fearing that, in the case of a religion which, like the popular conception of Christianity, has its doctrines based for the most part on historical facts, the opinions advanced by these learned and truly venerable men deal with the sacred terms 'Inspiration' and 'Infallibility,' in a manner likely to be most injurious to the religious truthfulness and the Christian faith of ordinary intellects; and for ourselves, we, as part of the unlearned many, are ready to exclaim—Oh! enviable logical perception, never to confound morality with religion! And never to doubt the mysteries of the faith, whilst all the narratives of facts, on which these mysteries are based, are avowedly open to criticism and disbelief!"—Pp. 64, 65.

In so far this witness is true. The surrender of the history of Scripture leads naturally to a surrender of its moral teaching, and that given up, the only privilege of theology is, that it is the last to disappear.

It is due to Mr. Macnaught to apprise our readers that he is very eloquent on the worth of the Bible, and on the potency

it has shown in elevating the race. It seems, however, to have escaped the reverend gentleman that the Bible which has been thus powerful has not been *his* Bible, but *ours*—not a Bible which mankind have regarded as made up less of the certain than of the doubtful, but a Bible believed to have been made unerring by the Spirit of God. The authority of the book has been a grand and essential instrument in its force. Denuded of that element, its future would bear little resemblance to its past.

1. That the *Theology* of the Scriptures is inspired is supposed by all who believe in the inspiration of the Scriptures in any sense. The believer in inspiration will always feel himself bound to listen in a reverential spirit to the apparent teachings of the Bible. He will feel that a revelation would scarcely have been made at all, if its purpose had been restricted to a mere reflection of existing human ideas and human feelings. Its object must be, not merely to give greater clearness to what is partially known, but to disclose the unknown. The attitude of such a mind accordingly will be that of a learner. Its natural intelligence and its moral consciousness will not be ignored, but both will know how to take their place with becoming docility before the oracle which now speaks. The antagonism with which a mind of this sort has to deal comes from the unbeliever—the man whose objections are not so much to the supposed inspiration of the Scriptures, as to the idea of their containing a revelation in any form. His ground is not that the theology must be true, seeing it is inspired; but rather that the inspiration must be imaginary, seeing that the theology is so defective and false.

The theology so described, however, is chiefly the theology of the Old Testament, which is said to be so low, sensuous, and anthropomorphic, as to be degrading to the Deity. But this theology has no more of this spirit of accommodation to human weakness in it than was needed by the condition of the race so addressed. And if there be weight in this objection to an attempt to raise human thought even to this poor level by such means, what shall we say of the Providence which has allowed creatures to come into existence in a state to need so much of this kind of assistance? This objection has been wonderfully expanded and exaggerated by some modern

writers; but in fact it is not so much an objection against revelation as an objection against Theism. The atheist may use it, but it is altogether out of place in the hand of one professing to believe in a God. That these anthropomorphic ideas of Deity in the Old Testament are associated with others of transcendent spirituality and grandeur, is a fact of which these traducers of God's ancient people are not so mindful as they should be.

2. But if the theology of the Bible has been urged as an argument against its inspiration, the same course has been taken not less frequently in regard to its *moral-ity*. The excellence, indeed, of the moral principles directly and formally inculcated in the Scriptures, has been generally admitted. The difficulty has been to harmonize particular facts with such principles. The deluge, the overthrow of the Cities of the Plain, the plagues of Egypt, the destruction of the Canaanites, the slaughter of the priests of Baal in the time of Elijah, and the imprecatory Psalms, are among the most conspicuous of the facts that are said to militate against the notion that the Hebrew Scriptures are inspired.

In dealing with such objections, we think it only just to say, that man has no more right to exact, that if a revelation be made to him, it shall be wholly free from anomaly and moral difficulty, than he has to insist that the material universe about him, and the moral government above him, shall be wholly free from perplexities of that nature. That these last are *not* free from such perplexities we all know and feel.

The sufferings inflicted by the Deluge, by the overthrow of Sodom, and by the army under Joshua, were great. But the sufferers were signally guilty, and there are laws in Providence which insure, that whenever such corruptness comes, a similar sweep of destruction shall be sure to follow. Whether the thing done in such cases be done by means of the regular action of law, or by a special mandate to a special agency, is a mere circumstance. The morality is the same in either case. It should be remembered, too, that the reign of law among all rude communities is to a great extent a reign of terror. This has never been otherwise—never can be otherwise. Then the theocratic nature of the Hebrew government, which made idolatry to be the worst form of treason; and which identified every form of treason

with apostasy and impiety; naturally brought severe penalties. It is only as yesterday that our own penalties for treason were too horrible for description. In this view, the priests of Baal were not only men convicted of open treason, but men who had openly joined impiety and apostasy with treason. And with regard to the imprecatory Psalms, one thing, at least, may be affirmed concerning them—they are not matters to be taken by us as examples. If they are regarded as being the natural expression of Hebrew patriotism, and nothing more; or if we account them—as we think they ought to be accounted—as being not so much private utterances as judicial and prophetic utterances, in either case they belong to a state of things which is not ours, and therefore they are no model to us. Our belief is, that while natural feeling had its place in connection with these imprecations, their great element was judicial and prophetic, derived from the spirit of the Theocracy, and pointing toward the Messiah and the fate awaiting His enemies. We do not know all the conditions possible to inspiration.

It is not always sufficiently remembered that justice and mercy belong equally to the Divine nature, and that they must belong equally to our nature, if our religion is to be healthy—Godlike. Some people are disposed to vest religion in the exercise of the softer affections only, to the great neglect of the affections of a firmer mold. Hence the strange sights we often see—people full of all sorts of pity for those who live by robbery and murder, while not a vestige of such feeling would seem to be left for the robbed or the murdered. If Christianity were the piece of mawkish sentimentalism which some people of this sort would make it, it would be time the world had done with it. The old Hebrew form of piety, which not only loved mercy, but hated iniquity, was much nearer the true standard than the piety of many in later and more favored times. The worst of it is, that our sentimentalists often show that they can be good haters upon occasion, and in their own way. Many bad deeds are recorded in the Bible, but we see nothing in the morality *taught* and *approved* there which may not be found to have been consistent with the highest rectitude, while its lessons, as a whole, are assuredly fraught with the largest benevolence.

3. We have said enough to indicate our opinion as to the relation between the doctrine of inspiration and the *historical* portions of the Scriptures. On this subject we expressed ourselves some years since as follows: "If we suppose history to be employed as the vehicle of revealed truth to man, it is any thing but reasonable to suppose that the history in such case will be false. Dogmatic truth, if mixed up with historic falsehood, would be sure to suffer much from being found in such company. It is possible, indeed, that the dogma should be veracious, while the history is not so. But our question here is about the *probable*, not about the *possible*. Are we to suppose that the historical element has been felt so loose as to become false—as to say that certain things were *said* or *done*, which were *not* said or done? For the greater part, the presence of the Divine with the human, in such portions of Scripture, may have been simply negative—guarding against error, but leaving the natural knowledge, and the general integrity of the writer, in large freedom. In other cases the Divine influence would be necessary to aid the memory, and sometimes directly to reveal facts that could not otherwise have been known. Moses could not have written even on natural subjects as he has done, had not those subjects been revealed to him. In his account of the creation, tradition may have aided him, but it could have aided him only in part. In the case of the Evangelists, also, some thing more than an assistance of the memory was necessary, inasmuch as they record many things which they did not see or hear, and which they could not have reported to us truly except under a special guidance. But where that influence is at all—even in its negative form merely—the result to us, though in a large degree the word of man, is truly the word of God; that is, *a record guaranteed as faithful by a Divine intervention*. The expression, 'it is written,' refers to what is written as being authoritative, final; and this must embrace all that has been written, so as to take the Divine authority along with it—to *history* with the rest. We take the historical Scriptures in this manner along with the other Scriptures because the inspired writers do all so take them. The historical Scriptures are designed to give us the character of the people among whom they were written, and of the times

generally from which we have received them. On this ground we can conceive of it as highly important that the sacred narrative should present to us much that is historically truthful, but which can not be regarded as ethically just, or religiously pure. In such cases, the general teaching of Scriptures is at hand, to enable us to distinguish between the right and the wrong, the true and the false. But we see mischief, and mischief only, as consequent on the theory which supposes that the sacred writers may have been inspired as *religious teachers*, and at the same time liable to *err egregiously as historians*. It is a great mistake to suppose that the difficulty in reference to the doctrine of inspiration is all but annihilated, by limiting that influence to the purely religious element. Is it possible, in all cases, to draw the line with clearness and certainty between the moral and religious, and that which may not be so described? Is it not, in fact, to the religious element of the Bible, more than to its subordinate material, that exception is taken by the opponents of inspiration? The skeptic may seem for a season to be directing his appliances mainly against the outworks of the Bible—its history and science; but be assured of it, this is done that, so much impediment being cleared away, the citadel itself, consisting of the moral and religious truth, may be brought to the ground. The scientific and the historical do not stand alone. The moral and religious arise out of them, are intertwined with them, are committed by them. To attempt to separate these woven threads, is to be involved in hopeless perplexity.\* Take, as an illustration, Abraham's offering up Isaac. Are the incidents in that narrative ours by inspiration, and consequently certain; or ours from merely human tradition, and consequently uncertain? If the latter, what becomes of the great religious lesson said to have been conveyed by that event; if the former, what becomes of the doctrine which affirms that inspiration has nothing to do with history? What we say in this instance, we might say in hundreds besides.

We shall, perhaps, be told here that, though the documents of various kinds from which so much of the narrative portions of Scripture appear to have been taken were not in general inspired docu-

\* *British Quarterly*, Vol. 14., pp. 233, 234.

ments, the men who made use of those sources of information, together with tradition, were inspired men, so that what thus comes to us comes on an inspired authority. If by this statement be meant that the writer of the Book of Genesis, we will say, or of the Gospel ascribed to Luke, was so inspired that he could readily separate between the true and the not true in these sources, giving us as the result the unmixed truth, then all that is required by the advocates of plenary inspiration is ceded. But this is not what is meant. The compiler in either of the above cases may have exercised his best discrimination, but after all he is supposed to have given us the true and the false in the same story. For it must be borne in mind, that the supposed advantage of the partial inspiration theory is said to be that, admitting this mixture of true and not true, it shows us how we may look on the fact, and not be much troubled about it.

It is a significant fact, that some nineteen twentieths of the religious truth coming to us in the Bible, comes to us through the medium of history and biography. In this fact we have evidence, not only that the Bible must have been designed for the hands of the people, but evidence that its biography and history must be true. To suppose that such a medium should have been chosen to such an extent, and to suppose, at the same time, that this medium has been left exposed to the chances of every sort of mistake and error, would be, we think, to impeach something more than the Divine wisdom.

It may be said, indeed, that the sacred history, even in this view, is as veracious as history in general, and that the evidence which is sufficient to warrant faith in other histories should be sufficient to induce faith in this history. Our answer is, if the sacred writers be not inspired in their teaching as historians, as well as in their religious teaching, then they fall even below the ordinary level as authorities. Genesis gives us a history of creation, which no man could have witnessed, or have known any thing about except by revelation. John gives us discourses from the lips of the Saviour, which could not have been given accurately from mere memory. So in a number of cases. Now Moses and John were aided supernaturally in these respects—that is, inspired, or they were not. If they were so aided, then the question is settled; if they were not, then

they cease to be trustworthy, inasmuch as they stand convicted of having attempted to do, by merely natural means, what no merely natural means could have sufficed to accomplish. If they are not inspired witnesses in these matters, it is scarcely too much to say they are no witnesses. The manner of the sacred writers, from Genesis to the Apocalypse, is, as we have said, that of men who knew nothing of doubt as regards the truth of the things which they report to us as true. If they have done this without inspiration, then they have done it without adequate warrant, and their authority, in consequence, is not only deeply impaired, it is, in fact, gone.

We have objected to the theory of partial inspiration, that it devolves on the common readers of the Bible the difficult, if not the impossible task of separating the religious and moral teaching of the Bible from material declared to be more or less deceptive. In reply here, it may be said, that we all of us admit that there is much in the Bible to disapprove as well as to approve, and that thus there is a shifting of the material of the volume that must be more or less made by every man. This is true enough. Satan, as we know, is allowed to utter his lie even in Scripture, but there is no difficulty in seeing that it is a lie. Bad men are permitted to give expression there to bad maxims and bad feelings. But it is easy in such cases to see that the tree is bad, and that the fruit is like it. Even good men, as they are presented there, manifest their imperfections; but we have the general, the clear, and the certain teaching of the volume to enable us to see when good men speak and act consistently, and when they do not. No man of ordinary discernment needs fail of making such distinctions. What the sacred writers give us as history, must be true as history. For that they are responsible; and they are further responsible for what they approve as well as record—but there their responsibilities end.

Nor should we quit this topic without observing, that supposing the sacred writers to have been inspired at all, no reason can be adduced from the nature of the case, against the idea of their being inspired in regard to the history they give us, as well as in regard to their general teaching. For adequate reasons, we can understand why they should not have been inspired to become our pre-



ceptors, more than very partially, in matters of natural science; but of the common facts in history, they were as capable of judging then as we are now, and while we fail to see any reason for leaving them to fall into error in that quarter, very weighty considerations suggest the importance of their being secured against it.

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## GOLD IN ITS NATURAL SOURCES.\*

WE are not about to treat of gold as the passion *auri sacra fames*, or after the manner of a prize-essay against covetousness;† but our aim will be to bring before our readers in one view what we have been enabled to learn from many quarters respecting the natural sources of gold, the geological and mineralogical conditions which appear to govern its deposition, and the mode of its occurrence, together with its geographical distribution in various parts of the world. It is only within the last few years that opinions worthy of scientific name have pre-

vailed on some of these points. These opinions, however, are scarcely known to the general public, nor should we be able to conceive of the wide and gross ignorance of the mass of people on such matters, if we did not see how extensively certain companies just expired have been able to win *golden opinions* from all sorts of men. Of these companies we shall have a word to say at the end of our paper. It is singular that, out of the numerous recent travelers' books on the Californian and Australian discoveries of gold, scarcely one that we have seen has much scientific information of value. It will be as well, too, to indicate the probable limits of auriferous repositories, so that men may at least know in what kinds of places gold *may* be found, and where it will certainly not be found. To this we shall add some notices of the modes of extraction from the soil and the rock, and the most reliable statistics of the actual produce of gold in our day, especially from Australia and California. In the present paper, we shall confine our observations to gold, only referring to silver in some statistical statements of the returns of the precious metals collectively. Incidentally, we shall glance at some topics of special interest.

And first, it will be interesting to learn how far gold was known to the ancients, and whence they gathered it. Gold, being always found in its native or metallic state, and being remarkable for its beau-

\* *Remarks on the Production of the Precious Metals, and on the Depreciation of Gold.* By M. MICHEL CHEVALIER, Translated by D. FORBES CAMPBELL, Esq. London. 1853.

*Land, Labor, and Gold; or, Two Years in Victoria, etc.* By WILLIAM HOWITT. Two Volumes. London. 1855.

† Had Pliny been living at the time, he might have competed for Dr. Conquest's prize, since, in commencing a chapter on gold, he speaks thus: "Oh! that the use of gold was clean gone! Would God it could possibly be quite abolished among men, setting them, as it doth, into such a cursed and excessive thirst after it—if I may use the words of most renowned writers—a thing that the best men have always reproached and raised at, and the only means found out for the ruin and overthrow of mankind. What a blessed world was that, and much happier than this wherein we live, when, in all the dealings between men, there was no coin handled, but their whole traffic was managed by bartering and exchanging ware for ware, and one commodity for another, as the practice was in the time of the Trojan war, as Homer, a writer of good credit, doth testify!"

tiful yellow color, would attract the eye of the most uneducated and thoughtless traveler, while other metallic substances lying in his path would offer no positive attraction to the eye, and would therefore not awaken his observation. In its superficial accumulations, borne as they have been by floods into valleys, and disseminated in minute particles amongst rolled pebbles, the eye of the curious would soon discover the glittering scales and particles, especially where summer heats, by drying up the water, rendered those beds which had formed river channels, and the courses of river torrents, dry paths for the journeys of migratory man. In the first records, therefore, of man's progress, it is indicated as the standard of his social position, as, alas! it is to too great an extent at this day. The sacred historian, in speaking of the river Pison, (probably the Euphrates,) observes that it *encompasseth the whole land of Havilah, where there is gold, and the gold of the land is good.* Job mentions gold (chap. 28: 1, 15, etc.) five times in one chapter; and further informs us, that *the earth hath dust of gold*, a phrase which shows that he was acquainted with the distribution of gold in sands and soils. It does not appear that up to this period gold had been employed as money, and we find both it and silver passing from hand to hand by weight; but when, after his trials, the wealth of Job was restored, we are informed that, in addition to the cattle and money which his visitors brought him, each of them also brought an *ear-ring of gold*, thus proving the early use of this metal for personal ornaments. We also gather from Scripture that gold must have been beaten into thin plates at a very early period, since *the ark of shittim wood was covered with gold, both on the outside and the inside*, as were also the staves, the wooden table with its staves, the altar of burnt incense, etc.

In the history of ancient times we remark periods when gold was accumulated in great abundance. The reign of Solomon was apparently the first of these periods, and that Hebrew King selected in a single year six hundred and three-score and six talents, (1 Kings 10: 14, etc.,) which we may conjecture to amount in our money to about £300,000. The ships of the King also brought from Ophir 450 talents of gold, or £190,800. His throne was of ivory, overlaid with *the best gold*;

all his drinking-vessels were of gold, and *all the vessels of the house of the Forest of Lebanon were of pure gold; none were of silver: it was nothing accounted of in the days of Solomon, and the King made silver to be as stones in Jerusalem.*

Ninus, the founder of Nineveh, and Semiramis, the founder of Babylon, had abundance of gold and silver. The wealth of Cræsus, who lived about 540 years before Christ, is proverbial, and the presents which he made to the temple of Delphi amounted to 4000 talents of silver and 270 talents of gold, nearly equal to £3,000,000 sterling, if our notions of the value of the ancient talent be correct. In a story of Herodotus, Pythias is mentioned as entertaining Xerxes and his whole army, and as stating that he was possessed of money which is estimated at £3,600,000. In the time of Ptolemy Philadelphus, as we are informed by Appian, the Egyptian treasury contained no less than £178,000,000. This was obtained by collecting with an armed force all the silver and gold of the people.

The wealth of the Romans was immense, as may be inferred from some historical incidents. When Cæsar was killed in the ides of March, Anthony owed £320,000, which he paid before the Kalends of April out of the public money, and squandered (according to Adams) more than £5,600,000. Cæsar himself, before he set out for Spain, was in debt to the extent of £2,018,000. Lentulus possessed £3,229,166. Claudius, a freedman, saved £2,500,000. Augustus obtained from the testamentary dispositions of his friends (some people *will* leave their fortunes to their Sovereigns) no less than £32,291,666 sterling. Tiberius left at his death the enormous sum of £21,796,875, which Caligula is said to have squandered in a single year. Vespasian estimated at his accession that the money which the maintenance of the Commonwealth required was £322,916,000. Up to the time of Augustus, the wealth of the world appeared to flow into the treasuries of Rome, when the production of gold from the Roman mines in Illyria and Spain suddenly ceased, and for a long period the world received no new accession of metallic wealth. Jacob, in his *History of the Precious Metals*, has computed the quantity of gold and silver in the Roman Empire for several years, and shows the rate of diminution to which the enormous wealth

of the Augustan period was subject. The highest amounts are as follows:

A.D.	Amount.
14 .....	£358,000,000
50 .....	322,200,000
122 .....	259,182,000
194 .....	209,987,420
266 .....	163,749,304
410 .....	107,435,924

14 205 046 48

The decline had reached, in the year 806, to the sum of £33,674,256.

It is singular that no Grecian or Roman, nor, in fact, any ancient writer, should have left us a treatise on the mines or sources of the precious metals to the ancients. The absence of such a treatise is felt the more when we attempt to realize the vast accumulations just mentioned. Although we have a Columella *De Re Rustica*, and a Vitruvius on Architecture, yet we have no author *De Re Metallica*, nor do we read of any such author. Some notices in Pliny's *Natural History*, and a few scattered sentences in Herodotus and others, are all we have appertaining to the subject. Would that some idle man of the Roman Empire had devoted himself to so interesting a topic; and that Horace, instead of sipping his Chian or Falernian wines, or Martial, instead of penning silly epigrams, had given to all time a serviceable treatise upon it! As it is, the only writer on the Grecian metallic wealth is a modern German, Boeckh, who, to his *Public Economy of Athens*, has added a learned dissertation on the silver mines of Laurion, in which he has investigated the subject with great critical skill.

There were gold mines in Thrace and the island of Thasus. Thessaly produced ores which were rich in gold. The supplies of Solomon were derived from Ophir,\* thought to be the modern *Sofala* in Africa. Pallas describes the remains of very ancient mines, (perhaps of the Scythians,) and Lepechin and Gmelin visited those remains of very early mining works on the eastern borders of the Ural mountains. That gold region still yields some amount of the metal. It is evident that much gold was procured from the mines of Nubia and Ethiopia. These, like

those of the Uralian chain, afforded a copper which yielded gold, and which the Africans knew how to separate. Belzoni proves that a very extensive tract had been worked in the Sahara mountains. The Pharaohs derived their wealth from these sources at the expense of much human suffering and loss of life. Mr. Jacob infers that not less than £6,000,000 sterling of the precious metals were derived from these mines, and that a large proportion of this must have been gold. Croesus may have derived gold from the auriferous sands of the river Pactolus in Lydia.

The Romans obtained their supplies of precious metals from various sources; and in fact monopolized as much of the mining produce of the world as they could. Some of their sources were Upper Italy, the province of Aosta, the Noric Alps, and Illyria. Anciently Spain yielded an abundant supply of the precious metals, which her quicksilver served to refine. According to Pliny, the Asturias, Galicia, and Lusitania yielded £20,000 of gold annually. Silver of the best quality was found in still greater quantities in that country. Both the Carthaginians and the Romans appear to have derived immense supplies from Spain. It is said that the single mine of Belbel yielded to Hannibal £300 aday; and we learn from Strabo, that after Spain had been reduced to complete subjection by the Romans, these proud conquerors drew from it upwards of £110,000 of silver in the space of nine years, or at the rate of about £12,400 annually. Polybius speaks of the silver mines in Spain in the neighborhood of Carthago Nova, which yielded every day 25,000 drachmas to the Roman *ærarium*; and Pliny mentions, as amongst the most productive mines belonging to the Roman Republic, rich gold mines near Aquileia, a town of Ictimuli, near Vercelli, in which 25,000 men were constantly employed.\*

When a new world was opened to us by the discovery of America, in 1492, new sources of the precious metals were also presented. From the year 1492 to 1500, America furnished to Europe gold and silver to the value of £52,000. In 1502, Orlando dispatched about £70,000; but

\* Where Ophir was, has puzzled many geographers to say. Huët and Bruce have placed it at *Sofala*, South Africa. Some seek it in the land of Yemen, whose capital is Sophar, or Taphar. Calmet places it in Armenia, at the head of the Euphrates.

\* Pliny's "Natural History," 33: 4. The number of men employed must be overstated; at least, if they were employed in mining.

most of his ships were wrecked, and little of the wealth reached Spain. Up to 1519, the annual produce of American gold was never greater than £52,000. At this period Cortez acquired Mexico, and he obtained at Chalco presents amounting to £70,000 sterling. When Montezuma took the oath of fidelity to Spain, he paid £65,000 in gold into the chest of the army; and Bernal Diaz reports that, on taking Tenochtitlan, £80,000 fell into the hands of the Spaniards. Pizarro landed in Peru in 1527, and in the twenty years which elapsed between that time and the discovery of the mineral wealth of Potosi, America forwarded to Spain £630,000 of gold every year. Thus the produce of gold in the sixty-three years which followed the discovery of America, amounted to £17,058,000 sterling. Mr. Jacob has calculated that the total gold and silver coin in Europe, at the end of the year 1599, was in value equal to £130,000,000. The entire supply of gold for Europe during the century from 1600 to 1700 was obtained from America, and amounted, in the one hundred years to £337,500,000 of precious metals. Of this amount £33,000,000 were sent to the Philippine Islands, India, and China; and it is estimated that £60,000,000 of gold were employed in decorating churches, and generally for ornamental purposes. If £34,000,000 be allowed for the loss by wear of money, etc., then the amount of coined money in Europe in 1699 was £297,000,000 sterling.

During the sixteenth century, the supply of gold and silver was still mainly derived from the Americas; the great Mexican mine of Valenciana producing £125,000 sterling *per annum* for forty years, and the district of Zacatecas adding largely to the amount: these sources were, however, rapidly failing toward the end of the century. A detailed list of these supplies is given by Humboldt, in periods of ten years from 1700 to 1809. The total product for the whole time of 110 years was £304,039,783. Such is the sum of exact returns from the several mints. But to this must be added the gold and silver of Mexico which did not pay duty, and passed into other channels, equal to £68,000,000. The total amount would thus be for 110 years, £364,847,739. This would give an annual average product of £3,316,706. Furthermore, we must add to the total amount from Mexico, as just

stated, the gross amount from Peru, Columbia, Chili, and Buenos Ayres, which was (for the same period) £273,293,356. This again would, if increased by the amount of the contraband trading, viz., £68,223,339, amount to more than £340,000,000. Thus, then, the gross product of the Americas from 1700 to 1809, inclusive, would stand thus:

From Mexican mines.....	£364,847,739
From Peru, Columbia, Chili, and Buenos Ayres.....	273,293,356
Add for contraband.....	68,223,339
Total from Spanish America..	£706,464,434
Total from Portuguese America	80,000,000
Grand total from the Americas	£786,464,434

The gold-dust of Africa, with the gold and silver of Europe, may be estimated at the annual value of £900,000. The annual value of the precious metals from Spanish and Portuguese America being about £7,000,000, (according to the above view,) the annual increase of the wealth of Europe, during the last century, was at the rate of £8,000,000, as nearly as we can arrive at it.

It is not an easy thing to estimate the produce of the precious metals since 1810; but, from the calculations of McCulloch, who relies on the authority of Humboldt, we may estimate the annual produce of the American mines as equaling £8,700,000. In 1840, the American mines were estimated to yield a produce equal to £5,600,000 *per annum*.

As we have thus arrived at our own days, let us turn aside for a time from mere statistical statements, and, before we return to figures, look at the geological occurrence and geographical distribution of gold.

Gold is found, as to geological position, in the primary groups of rocks, including the "transition strata" of earlier writers; which, as they contain the oldest organic remains, have been recently denominated "palaeozoic." This series constitutes the dorsal spine of the great mountain chains of both the Old and New World. There are, however, vast regions, amounting, perhaps, to three fourths of all known lands, where no such rocks appear. Experience has shown that it is only in the palaeozoic group of rocks, as above defined, (including certain associated igneous



rocks,) that gold has been found in quantities sufficient to pay for working. All the vein-stones, or rock masses, from which much gold has been derived, (whether by natural catastrophes or by human endeavor,) belong to the primary and transition groups, and especially to those portions of them which have been modified by the eruption of matter in a state of fusion, or at a very elevated temperature. It is now thought that the gold-bearing rocks are not confined to particular geographical zones, as formerly supposed; but they are found protruding more or less as meridional bands in all countries where the primary series of rocks is visible and prominent.

Where primeval breakers, waves, and currents acted on the rocks containing gold, whether it were disseminated through the mass of the rock, or confined to the quartz veins traversing it, fragments of the auriferous rock would be detached equally with other pieces. Such fragments, either slightly worn, or altogether broken and ground down, would afterward be found in the drift-clays, sands, and gravels, and would in all probability be much richer in gold than the actual gold-bearing rocks themselves. A current of water having sufficient force to bear down sand, or pebbles of quartz, or any other rock of perhaps  $2\frac{1}{2}$  specific gravity, might not be able to move along associated fragments of gold, which metal has a specific gravity of 18 or 19. Moving water has, therefore, formerly effected upon the auriferous rocks that which the miner would now effect, namely, has broken them up into fragments, swept away the lighter particles, and left the gold behind.

Rivers are great natural *cradles*, (to use a digger's term,) sweeping off all the lighter and finer particles at once, the heavier ones remaining lodged against any natural impediments, or being left where the current slackened in force or velocity. These are the reasons why the auriferous drift may become richer in gold than the mass of the rock from which it is derived; and there are other reasons, also, why the auriferous drift of a country, first deposited after the formation of gold, should be richer than any subsequent one.

In considering the action of currents and rivers, we discover the causes of the condition of gold in alluvium. Very large fragments of gold, or even of quartz, or

other rock containing much gold, would not be carried far by any imaginable stream of water. The discovery therefore, of the larger pieces of gold, named *nuggets*, is equivalent to the discovery of the neighboring parent site; when we find the one, we can not be far from the other, even though we cannot penetrate to its depths. On the contrary, gold dust, in scales or spangles of the metal, may be transported to considerable distances. From such differences may arise a fairly equable distribution of gold over large spaces of drift; for the waters, which had power enough to move the large fragments a few hundred yards, would carry the smaller ones some miles away. In the former case, rich lumps would be deposited sparingly here and there; in the other, scales and spangles would be scattered like broadcast seed from the sower, and cast equally over the wide spaces where the currents began to lose their force and speed. When we find gold in the sands of rivers, we must not conclude that it was detached from the rock by the actual water of those rivers. It may have been thus detached to a small extent, but rivers would scarcely be able to abrade many auriferous spots in these beds of rock. On the contrary, we must look still further back to the older drifts, which would be naturally accumulated in the lowest hollows and depressions of the surface of rocks, or in the preëxisting valleys; and as the rivers of a country naturally follow the same course, it is from these loose and incoherent materials that a river derives its store of gold. We may presume that a river which traverses a country of auriferous drift by its action resifts and reassorts the materials that have once been sifted by the waters in which the drift was formed, carrying forward all the matters that fall into it, but soon depositing the heavier matters, and sweeping off all the lighter particles into distant and lower regions.

If we stand upon a hill in our own country, and glance at the windings of some subjacent river, we observe that, as it winds through the valley, it attacks first one bank and then another, eating into the base of a cliff where the full force of the current rolls against it, and causing the continual fall of small portions of it into the water, and then depositing them below, in places where the current is checked by some impediment. It is thus

that sand banks and silted banks are formed; and it is thus that we may be led to examine the proper places in river-courses for gold dust. First the search should be made in the inside curve of the river's bend, where sand banks and spits are accumulating, or wherever the force of the current is checked, and, consequently, the transported materials are deposited. Next, where a river has cut down through the drift to the solid rock below, especially if hard jutting ribs of rock stretch across it, as is often the case, gold is most likely to be dropped in the upper side, and in the holes and crevices of these rocky bars where they check the force of the stream, and catch any heavy matters that might be rolled along at its bottom. If a digger can turn the bed of a river, such a miner's manœuvre at the right spot, where there are several natural bars, ("cleets,") or where there are holes in the rock for the gold to drop into, is likely to be rewarded by the accumulated results of centuries of natural gold washings.\*

The drift deposit of gold is thus seen to be far more ancient than that of the fine sands, which are even now annually brought down by rivers, and which do contain gold in workable quantities. As regards age, there are three stages in the auriferous accumulations: 1. The age of the formation of gold† in rocks, as quartz; 2. The deposition in the ancient drift derived from these rocks; and, 3. The more modern and existing driftings in river sands, found upon the surface. The second may be found under a cover consisting of soil, peat, and sand, or gravel, the thickness of which varies from one to seventy feet. Seventy feet is, indeed, the greatest thickness of cover yet met with in the Russian gold stream-works at Krestowosdwischensk in the Ural Mountains. An Australian lecturer thus describes the deposits at the Ballarat diggings: "On the surface of the earth was turf in a layer of about a foot thick, below which was a layer of rich black alluvial soil, and below that gray clay; below that again was a description of red gravel, which was sometimes very good, then red or yellow clay in which gold was

found; and then a stratum, varying in thickness, of clay streaked with various colors, and scarcely worth working. The next stratum was of hard, white pipe-clay, which was a decided barrier. Immediately above it, however, was a thin layer of chocolate-colored clay, tough and soapy: this, the celebrated 'blue clay,' was very rich." The ground in which the diggings were situated was a sloping bank. The blue clay is found near the surface on the brow of the hill, that is, at the depth of a foot; but it is sometimes necessary to dig twenty feet before reaching it.

Again, Mr. Latrobe, ex-Governor of Victoria, describes the Ballarat diggings as carried on through: 1. Red ferruginous earth and gravel; 2. Streaked yellowish and red clay; 3. Quartz gravels of moderate size; 4. Large quartz pebbles and boulders, masses of ironstone set in very compact clay, hard to work; 5. Blue and white clay; 6. Pipe-clay. He also observes, that in some workings the pipe-clay may be reached at the depth of ten or twelve feet; in others, not at thirty and upward. These are popular describers; but recently some geologically-instructed persons have inspected these deposits, and from one of them we learn such particulars as lead to the following arrangement of the alluvial deposits in a more scientific form. They may be thus displayed as to geological chronology:

- |                                |   |
|--------------------------------|---|
| I. Deposits older than basalt. | { A. Before the eruption of basalt and the bearing beds of basalt-boulders, which are called "charriages."  |
| II. Newer than basalt.         | { B. Contemporaneous with charriages of basalt-boulders.<br>C. Newer beds covering the basalt-boulders, but older than the formation of the existing valleys. |

The source of the gold appears to be an undefined succession of clay slates and argillaceous-arenaceous-micaceous slates, seemingly interstratified, as regards their strike, with quartz veins of all sizes, which form the matrix of the gold. The basalt hems in the gold district on the east and the west like an iron frame-work; it is a rock of evidently igneous origin, and has often been poured out or upward in a molten

\* From the "Observations" of J. B. Jukes, Esq., who visited Australia.

† There are geological reasons for thinking that gold is of comparatively recent origin, compared, at least, with tin, copper, lead, etc.

state, into or over other strata. Its magnificent pillar-like appearance is well known at the Giants' Causeway and at Staffa. A vast mass of basaltic rock has been fused forth in parts of Durham and near Dudley, as well as in the neighborhood of Edinburgh.

The discovery of the great gold-fields of Australia may be said to have been the fruit of analogical reasoning applied to geology. Sir R. I. Marchinson, in his Address to the Geographical Society in 1844, alluded to the possibility of the great eastern chain of Australia being auriferous, basing his suggestions upon his knowledge of the auriferous chain of the Russian Ural Mountains, and his examination of Australian specimens, maps, and sections. This suggestion having found its way to the Australian journals, a Mr. Smith was induced, in the year 1849, to search for gold, and he found it. He sent the gold to the Colonial Government, and offered to disclose its locality upon receiving £500. The Governor not placing full faith in his statement, and remembering that all is not gold that glitters, declined to grant the required sum, but offered, if Mr. Smith would name the locality, and the discovery were found to be really valuable, to reward him accordingly. Mr. Smith, doubtless thinking his secret perfectly secure, did not accept this offer. But two men can reason analogically as well as one; and a Mr. Hargreaves, who arrived with the benefit and prestige of his Californian experience, re-made the discovery, and obtained a reward from the Government upon their own conditions.

This first discovery was made near small streams which run from the northern flank of the Corrobalaras down to the Macquarie; the gold being found in the sand and gravel accumulated especially on the inside of the bends of the brook, and at the junction of the two water-courses, where the stream of each would be often checked by the other. Being coarse gold, its parent site was at no great distance, and probably in the quartz veins traversing the metamorphic rocks of the Corrobalaras. The Government geologist reported on the truth of the discovery, and shortly after found gold in several other localities, especially on the banks of the Turon. This was a much wider and more open valley, and the gold accordingly was much finer, occurring in small scales and

flakes. It was, however, more regularly and equally distributed through the soil. At the head of the Turon river, among the dark glens and gullies in which it collects its head waters, in the flanks of the Blue Mountains, the gold became coarser, occurring in large lumps or nuggets; but these were more sparingly distributed. These facts are proofs of the correctness of the theoretic description, given above, of the original deposition of the gold. Ignorance was, of course, displayed in some of the local descriptions of the gold. It was said, for example, to have been evidently in "a state of fusion," which it could scarcely have been; but from having been deposited in small holes and crevices of the quartz rock, and afterward rolled, and perhaps partially discolored on the surface, it might assume some such form and appearance as melted fragments of lead. This, we think, was the case, from our inspection, in this country, of a large collection of nuggets.

In Mr. Arrowsmith's map appended to a Parliamentary Paper, we see the auriferous spots tinted in yellow. They occur at intervals along the flanks of the great eastern chain, or on its lateral spurs and subordinate ranges, through an extent of country about one thousand miles in length. Several spots in various parts might be named, but the mere name would convey no information. Some of them, as Ballarat, and Mount Alexander, and Mount Blackwood, north-west of Port Phillip, have become well known. The geological facts are important. In every one of these localities granite and metamorphic\* rocks occur, and quartz veins are frequently spoken of. In scarcely any of them do we find mention made of the gold being seen in the actual rock; but in the drift-clay, sand, and gravel, or lying loose on the surface of the ground. There was, indeed, a famous mass, called "the hundredweight of gold," found by Dr. Kerr, north of Bathurst; but it is described as a block of quartz highly auriferous, lying among a lot of other loose blocks, and evidently derived from a broad quartz vein running up the hill behind

\* *Metamorphic* rocks consist of a stratified division of what used to be called "primary rocks." They are highly crystalline, such as gneiss and mica schist, and are named "metamorphic," because they have been altered by the influence of volcanic heat and other subterraneous causes, under pressure. The action, however, is matter of discussion.

them. No conceivable current of water could have carried such a mass far from its original site.

Turning to California, we find the auriferous deposits there existing under the same geological conditions, varied only by local peculiarities which do not affect the general characteristics. Respecting its future and ultimate produce of gold, it has been thought that the metal is too richly sprinkled to promise any very long continuance of an abundant yield; for it has been found by miners to be almost a law, that ore too highly concentrated in any given locality of lodes and veins, is, in the long run, much less profitable than when broadly and widely diffused throughout a mass of rock. Hence other regions, whose gold is disseminated through mountain masses, may afford a supply for ages to come, long after the rich gravel troughs of California shall have been exhausted. Yet even this supposition may prove, like so many others on the gold regions, unfounded.

There is, as Sir R. I. Murchison has noticed, this remarkable geographical feature connected with the mineral phenomena of California: all the great quantities of gold have been derived from some twelve or fourteen localities in that portion of the western flank of the Sierra Nevada which assumes a north north-westerly direction from that parallel to the meridian it had before followed, between  $37^{\circ} 30'$  north latitude. By reference to the map of Fremont, it would be seen that the center of this westward deflection is directly opposite to where the extremity of an east and west ridge impinges on the Sierra Nevada, and is associated with the protuberance which alone has proved to be so eminently auriferous in all the long chain of mountains ranging from the eternal snows of Russian America, to Mexico, Peru, and Chili. It is possible that the intersection of ridges may account for a great local development of metal, just as in mining practice at home and abroad it is found that the richest branches of mineral veins are often detected at their intersections. Some great laws of this kind, obscure and almost beyond our search, may govern the thread-like veins of metal in the "lodes," and the enormous mountain masses of primary rocks that course and cross the earth like gigantic ribs.

We may now glance at the gold tracts of Russia, chiefly situated in the Ural

Mountains. These have proved very rich in gold. In the five years from 1847 to 1851 inclusive, the quantity of gold and silver raised in Russia has amounted to a weight of 296,932 pounds troy. Taking the produce of 1851 from Erman's *Archives*, we find that the Russian works yielded 64,932 pounds troy of gold. Sir R. Murchison is disposed to consider that the yield of gold in Russia at the present time is nearly equal to £3,000,000 *per annum*. Let us speak of one locality in particular, which is celebrated for its gold mine, viz., Beresov. The mines there are said to have yielded, during the century previous to 1841, about 24,500 pounds avoirdupois of gold, worth £1,500,000, and obtained from about a million of tons of ore stuff; but this amount is inferior to the recent and present rate of yield of gold from these mines; for some beds were discovered in 1823 which, during one year, yielded gold to the amount of 262 *poods*. Erman, who visited the place some years since, says: "Upon leaving the woods, we first observed an infinity of conical heaps of mining rubbish overspreading the entire of the open plain. These are owing to the difficulties encountered in draining the mines. The ore is pretty equally distributed as low as the shafts penetrate. We entered a mine, the shaft of which was 105 feet deep, but struck into a gallery about half-way down, in which people were at work. The surrounding formation was soft, white, decomposing gneiss, studded with bright veins of quartz and quantities of silvery talc. Brown spots of crumbling iron pyrites are strewn through it; but the large crystals of brown ironstone are only met with where the quartz is deposited in narrow and tortuous streaks and veins. It is from both sides of the hard white lines that the entire iron ore is collected containing the gold, partly dispersed in fine plates, and partly accumulated in lines and filaments like wire. The ore has to be followed in every direction, till it runs itself out in the rock; for there is no uniformity in the range of the veins." We have, in this case, a kind of auriferous deposit different from those already mentioned, viz., gold combined with pyrites, and disseminated in a vein of quartz. Auriferous pyrites is not unfrequent in several countries, and occurs rather abundantly in our own, as, for example, at Alston Moor, in Cumberland. It



appears to be doubtful whether in every instance the gold exists in pyrites in minute metallic particles, or whether, in some instances at least, it may not be present in combination with sulphur. A piece of this kind of ore would present to the reader no external indication of the precious metal, and can only be known by chemical analysis: when once known by analysis, the outward appearances may be recognized in other specimens, and the inference would be that they might also contain gold. To find auriferous pyrites is, however, by no means equivalent to finding gold. Any one may take his fill of this ore from the vein called the "Backbone," near Alston, Cumberland; but he would probably have to expend a sovereign in extracting from it sixteen shillings' worth of gold.

There are several chances against the possessor of the ore; for an ordinary practical assayer may be misled into unintentional mistakes; and all depends upon the amount of contained gold. Especial care should be taken in the sampling of gold ores, where the precious metal is irregularly diffused through the mass in particles of very different size: for minute errors in sampling will be greatly multiplied when the quantity of gold *per ton* is calculated from the assaying of five hundred or a thousand grains of ore. A few pounds spent, in the first instance, in obtaining assays from the first practical chemists, would have prevented the subsequent loss of hundreds and thousands in abortive gold mining, and the verification of a *dictum* of Mr. Punch: "Most Golden Calves, when thrown into the crucible of Time, turn out to be no better than Pigs of Lead."

Such being the principle forms and combinations in which gold occurs, it may be possible to form an approximate idea of its geographical distribution, founded upon its mineralogical conditions. If we can obtain or form a geological map of any country, we can see how far its palæozoic rocks and newer tertiaries extend over it, if at all. If absent, in all probability gold is absent; if present, gold *may* be found in some portions where those rocks and beds prevail. But, as already noticed, that the rocks should be metamorphic or mineralized seems to be as necessary as that they should be old. It is very remarkable that the countries which were necessarily to give laws and

civilization to the ancient world—viz., Lower Egypt, Greece Proper, Italy, etc.,—should all alike have been destitute of gold procurable from their own soil, arising from the geological cause that those countries contain no mineralized old rocks. It would be a curious geological problem to ascertain why the *older* rocks, when mineralized, are preëminently auriferous; but the solution of such a problem is far beyond our present knowledge, which has only recently arrived at an apprehension of the geological conditions of gold. In pursuance, however, of our previous remark, Italy, south of the Po, contains scarcely any stratum older than secondary limestone, and is totally destitute of gold, unless a part of Calabria be an exception. But in proceeding to Sardinia and Corsica, where Silurian and crystalline rocks are found, there we find that gold mines have been worked in early ages.

It follows, from what has been said, that a *Gold Map* of the world might be attempted, even in our present state of knowledge. Such a map has been attempted by Adolph Erman,\* though we have not been able to inspect it. From Sir. R. I. Murchison we learn, that the constructor of this map marks in it *seventy-seven* tracts in which gold has been worked, or is known still to exist; and shows, in contradiction to the old received opinion, how greatly it predominates in the northern hemisphere. Such a map might be made interesting by the employment of some degrees of shading, to indicate the comparative richness of the various tracts, and their rate of exhaustion. In a few paragraphs we may glance at the districts which would be included in a gold map of the world.

Gold abounds in Asia, and the deposits at the foot of the Ural Mountains are very rich. A piece of gold was found there in 1826, weighing twenty-three pounds, along with other pieces weighing three quarters of a pound each, together with the bones of elephants. The diluvium is all ferruginous. In this region a large quantity of gold was accumulated in the time of Herodotus by the Gothic tribe of the Massagetæ, and must have become an important source of wealth and luxury to the Greeks. We may place the locality of this wealth between the 53d and 55th

\* *Geographische Verbreitung des Goldes.* Berlin, 1848.

degrees of latitude. More to the east, a region as large as France has lately been discovered with a soil rich in gold dust, resting in rocks which contain it. The treasures in that part of the Altaic chain called the Gold Mountains were discovered in 1834, forming a mountain knot nearly as large as England, and from this a great quantity of gold has been extracted. There is a region of gold sand, not exactly known, but associated with the fabulous story of gold-collecting ants.\* This region is probably situated within a more southern latitude of 35° or 37°, either in the Thibetian highlands, east of the Polar chain, or northward toward the desert of Gobi, which has likewise been described as an auriferous district by an accurate Chinese observer who lived at the beginning of the seventh century. We know, too, that gold is found in Tibet, in the Chinese province of Yun-nan, and abundantly in the mountains of the Indo-Chinese peninsula, in Japan, and in Borneo; in which latter island it occurs near the surface in six different places. In the extensive continent of India, gold seems to be most common in the kingdom of Siam.

In Africa, gold has been found from the earliest periods. The modern town of Tripoli is built upon a rock washed upon two sides by the sea, and southward and westward it has a large sandy plain. The people may be said to walk upon gold. The precious ore is sifted from the sand on the sea-shore, but it is said that whole veins of this metal are found inlaid on the approach to Fezzan. In the mountains of Atlas and Morocco there are numerous iron mines, and some gold and silver mines, not permitted to be touched. Timbuctoo, the African El Dorado, the *Belled el Tibbr*, i. e., "Land of Gold," is the great market where all the Kafilas from the north-east meet those of the south-west, and though itself producing no gold, is the great market for it. To the south of Kajaaga, and east of Bondon, is the country of Bambouk,† the Peru of Western Africa, from which the greater part

of the gold that finds its way to the coast is obtained. It lies ten leagues south of the Senegal. The gold diggings of Bambouk are said (our authority is Mr. Wyld) to extend over 10,000 square miles. The indolent natives, half a million in number, leave uncultivated the most fertile lands in order to unite in villages near the gold mines. These are national property, and the gold washing is carried on during eight months of dry weather, and ceases when the rainy season commences. The richest mine is that of Natakou. At three quarters of a league west is a small insulated round-topped hill, three hundred feet high, the whole of which is an alluvial formation, with a quantity of sand, pulverized emery, grains of iron ore, and gold in lumps, grains, and spangles. There is not a cubic foot of this hill the soil of which is not loaded with gold. The natives have perforated the hill in all directions with pits six feet in diameter, and forty feet deep. The deeper they go, the more abundant is the gold. There are 1200 such pits, formed with a gentle slope and steps for descending; but as the sides are not planked, they frequently fall in, and bury the laborers. A traveler states that the Negroes literally believe that riches grow in hell, and that the maker of all this gold is the devil—certainly a very unsound creed, though indicating very clearly the evil influences of gold in those remote regions. Bambouk furnishes the greatest part of the gold sold on the Western Coast of Africa, as well as much of that which is brought to Morocco, Fez, and Algiers, and to Cairo and Alexandria. Another region of Africa where gold is abundant, lies on the south-east coast, between 15° and 22° of south latitude, and nearly opposite to Madagascar. There, gold is found not only in sand, but in veins, and thereabouts some place the ancient Ophir. Nearer to the Equator, and on the western shores of the continent, the Gold Coast supplied the Portuguese, and afterwards the Dutch, with immense treasures in gold. Dr. Livingston mentions that he found grains of gold, and gold districts hitherto unknown may be discovered in Africa.

America is abundantly stored with gold by nature. It is chiefly collected in the alluvial soil, and in the beds of rivers, and sometimes, but more rarely, it is obtained from veins. In Mexico the gold is chiefly found in its numerous silver veins. All

\* A passage has been recently discovered in the *Mahabharatta*, in which the ant-gold is mentioned. Humboldt, however, collected shining grains of hyalite, (a species of quartz,) brought together in heaps by ants in the Mexican highlands, in basaltic districts.

† Not marked in some popular Atlases, but always in the best maps.

the rivers in the province of the Caraccas, about 10° north of the Equator, furnish gold. In the Spanish part of America gold is obtained in the alluvial soil in Chili, and also in the province of Choco, where it is more abundant; but in Peru it has been extracted from veins of unctuous quartz, marked with ferruginous spots. In the Vice-Royalty of La Plata, some thirty mines or pits have been named from which gold has been obtained. The whole ridge of the Cordilleras, from the town of La Paz to Sicasica, abounds in ores containing gold. About one hundred and fifty years ago, a projecting portion of the rock (an argillaceous schistus) fell down, and from this stone masses of pure gold, weighing from two to fifty pounds, were detached. In the Brazils, gold is found almost everywhere along the foot of the immense chain of mountains running nearly parallel with the coast, and extending from 5° to 30° of south latitude. The washings of Minas Geraes have been very productive.\* The vicinity of the Rio das Mortes (the River of Death) everywhere attests the extensive search formerly made for gold there, and the profusion of precious metals found upon the surface. All the banks of the stream are furrowed out, the whole of the vegetable mold has been washed away, and nothing remains but a red earth, cut into square channels like troughs, with a narrow ridge between.

A considerable quantity of gold has been collected in North Carolina. The gold region of the United States is a metalliferous belt, extending in a south-west direction through the States of Virginia, North and South Carolina, and Georgia. Its length is about six hundred miles, and it has a mean breadth, from its southern to its northern edge, of about eighty miles. In every part of this extensive line, native gold is met with in alluvial deposits and in various streams, while the contiguous rocky strata abound in quartz ore veins more or less auriferous.

Of California we have already spoken, and also of the ancient productiveness of Spain. We can only name Hungary and Transylvania. Schemnitz and Kremnitz were noted for auriferous sands, and for gold accompanied by silver, lead, and iron pyrites, in quartz.

\* Now we learn that the annual labor of a slave produces only about £4.

We have left the Australian gold fields to the last. They require special attention, and are, of course, the most interesting to Englishmen. The geological conditions which have originated and governed these and other auriferous drifts we have previously illustrated, and our present question is as to their extent and area, and their probable yield of gold. No reliable information as to the extent of the several gold fields has been yet presented as a whole. The vague and marvelous accounts of newspaper correspondents do not seem entitled to much credit, as every man who does not make a survey draws upon his imagination. Commissioners have been appointed to inquire into the condition of the gold diggers, and from them we gather some few facts respecting the mines and the mining prospects. One State document has, however, appeared, and has been quoted in the Australian papers, which come to our hands while we are writing.

The Select Committee of the Victoria Legislative Council, appointed to consider and recommend the best mode of developing the mineral resources of the colony, have now given their Report to the public. From this we learn, that gold digging is not by any means the profitable employment it was supposed to be. Statistics represent that, at the end of last year, there were 100,000 miners, either engaged in actual mining, or searching for new diggings, upon the gold fields of Victoria. The estimated yield of gold that year was £12,500,000 sterling, and therefore the earnings of each man were not more eight shillings *per day*—something less than a day-laborer's wages in the neighboring colony—to say nothing of the uncertainties attending the occupation of a gold-digger, which are great. The method of digging is wholly unscientific, much of the gold is lost in manipulation, and the chance of gain is so unequal, that while a few persons may gain fortunes, the great majority are earning only a bare livelihood.

The probability of the exhaustion of the Victoria gold fields has been much discussed; but this Committee publishes a very sanguine opinion in favor of their continued richness for no less a period than 2240 years. The statistics given to establish this view are those of M. Brache, who is considered a reliable authority. He estimates the auriferous lands of the

colony to be 20,000 square miles, including 200 square miles of quartz reefs. He computes that there are about 20,650,000,000 tons of quartz, which would take 100,000 miners 300 years to work up. The value of these, estimated at £1 *per ton*, would give the enormous yield of £62,000,000 sterling *per annum*; allowing 10,000 companies, of 10 men each, to quarry and crush 24 tons a day. The alluvial lands are further estimated at 20,444,000,000 cubic yards; and if worked up by 100,000 miners, at the rate of 90,000,000 cubic yards *per annum*, they would occupy 2240 years in exhausting their treasures. The grand total of the estimated auriferous wealth of the colony is put down at £26,783,000,000 sterling. Well-directed surveys, and useful geological investigations, are strongly urged as essential to the best development of these immense auriferous accumulations.

Now, if due reliance can be placed on the above estimate, there is still a glorious and golden future for the Australian diggings. Of the returns already made, we can write from a search into Parliamentary Papers, which afford the following particulars of exports of gold from New South Wales and Victoria diggings:—

EXPORTS FROM NEW SOUTH WALES.		EXPORTS FROM VICTORIA.	
Year.	Value sterling.	Year.	Value sterling.
1851 .....	£468,336	1851 .....	£438,000
1852 .....	3,600,175	1852 .....	6,135,000
1853 .....	1,781,171	1853 .....	8,664,000
1854 .....	773,209	1854 .....	8,255,000
1855 .....	209,250	1855 .....	11,303,000

The aggregate receipts for the five years, from both districts, amount to £41,830,696; of which £7,032,141 came from New South Wales, and £34,830,696 from Victoria. It appears that all of this vast amount, except about two millions, was brought direct to this country.

We shall now include the yield of the California gold fields with the Australian, for the same five years, and present the whole in one view:

#### YIELD OF AUSTRALIA AND CALIFORNIA.

Years.	Value sterling.
1851 .....	£8,907,000
1852 .....	20,935,000
1853 .....	22,445,000
1854 .....	22,629,000
1855 .....	31,421,000
	£102,949,000

We find that M. Chevalier, without giving particulars, estimates the total imports of gold from Australia and California into Europe to be £106,000,000, which (as some considerable imports were made from California before 1851) may be taken as nearly agreeing with the above estimate, and as probably founded upon it. The gold fields of California were discovered in 1848. In 1844, the total of gold and silver in the United States was (according to a newly-issued State Paper) estimated at 100,000,000 dollars. The imports and receipts of bullion at the Mint, from American mines, (after deducting the exports to September 30th, 1856,) have added at least 150,000,000 dollars to the amount of gold and silver in the United States; without taking into account the amount brought in by emigrants and returning travelers, or the amounts so taken out, or used in manufactures.

These great amounts are, we believe, beyond the expectations and prophecies of the highest authorities a few years ago. A highly respected Government officer, who has, more than any other such gentleman, devoted himself to statistics, declared in a lecture, published in 1853, "It has been estimated that £23,000,000 of gold and silver will be added to our store of precious metals this year. This appears to be one of the exaggerated statements arising out of the fever of the day. *We shall not receive more than £11,000,000 from the United States, California and Australia; and if we receive £3,000,000 more from all the other sources of supply, it will be as much as we may expect. Many former sources of supply are cut off, and the probability is, that we shall not receive nearly so large a quantity.*" It seems, then, that those who stand highest, as authorities, can only form mere conjectures—which the event may soon falsify. The Australian and Californian amounts are, indeed, most remarkable. If only twenty millions *per annum* be added to our stores of gold, from these sources collectively, and if other gold fields yield, in some few instances, the usual or increasing quantities, one would imagine some monetary changes must ensue.

An instructive table has been compiled by M. Chevalier, in which he shows the produce of gold from various countries, in 1846, two years before the great discoveries of gold in California, and in



1850, two years after; adding also the produce of silver. The following extract of a portion of this table will be interesting:

	Produce of Gold and Silver in 1846.			Produce of Gold and Silver in 1850.		
	Gold.	Silver.	Total.	Gold.	Silver.	Total.
California .....	—	—	—	12,000,000	62,088	12,062,088
Mexico .....	249,753	3,457,020	3,706,773	382,901	5,383,833	5,766,234
Peru .....	96,241	1,000,583	1,096,824	96,241	1,000,583	1,096,824
Total, North and South America, from 8 sources }	1,801,560	5,261,619	6,563,179	13,341,989	7,259,824	20,601,813

It thus appears, that the product of gold from California, for 1850, was not much less than the total product of North and South America for that year. For that same year, the product of gold from Russia was £4,175,860; the largest of the other countries afterward named. It follows, then, that all the gold produce of the auriferous districts of the world is (taken singly, country by country) little, compared with the produce severally of Australia and California. If Victoria alone can furnish ten or twelve millions *per annum*, the aggregate increase of gold in the world must soon be immense.

We fear that few persons who have concerned themselves with this subject have reflected upon the singular proof which it affords of Providential government of the world. In those far distant wastes, stores of gold have been forming and accumulating for ages, unnoticed by the eye of avaricious man. Always ready to yield their treasures, those districts have been as safe as if they had been locked up and barred, or as if mountains of inaccessible height had stood watch and ward over them. Just, however, when the commerce of the world was extending wider and wider; when science and enterprise had established speedy intercommunications betwixt distant lands; when nations became over-crowded and over-peopled; when bread was becoming a scarce thing to the half-furnished; when thousands were pinched and parched, the gold fields of California, and, shortly after, those of Australia, were discovered. Why not before? Not for want of scientific

men or knowledge; not for want of adventurous travelers; but because, manifestly, had they been long previously discovered, the emigrative enterprise of nations had not then received its heaven-directed impulse. The coincidence of the pressure at home and the discoveries abroad is the remarkable thing; and such almost unobserved coincidences are constantly affording to the wise and good new indications of a Providential government. We think, too, that a proof of benevolent design might be drawn from the way in which gold is disposed and distributed; not only in *time*, as to its discovery by man, but in *space* also. It is not the exclusive treasure of any country. Does it not strike the reader as remarkable, that a metal, obviously so serviceable to man, is yet so distributed, in at least seventy-seven tracts of country; that, whilst it appears to be the subject of a particular set of geological conditions, it is nevertheless sown broadcast over the earth? Precious as it is, yet it is not too rare; rare enough to prevent it becoming an unvalued thing; common enough to permit of its continual use. It would almost seem as if the Great Creator had designed this metal to occupy the place it does in man's civilized life; for it can not be exhausted, and if ever the present great gold fields should cease to yield abundantly, doubtless others will be discovered, or other means of extracting gold from sources at present unremunerative would be devised. While it can not be exhausted, owing to its abundance, so likewise it appears as if it could not be

extracted too rapidly. It is disseminated in minute grains, over vast tracts of sand, and clay, and rock; and so disseminated, that some considerable labor is necessary to separate it. No man, therefore, can sit down and steal, as it were, more than his share from the natural repositories. This opinion is remarkably corroborated by the information above recorded, as to the equalized rate of earnings at the gold diggings. In the main, and in the course of time, inequalities cease; and notwithstanding a few fortunate finders of masses and rich spots may become suddenly enriched, yet it seems to be impossible that this should be otherwise than an exception to the general rule. Individuals can not draw large cheques on Nature's gold-bank; if they do, the answer of Nature generally is, "No effects." She is her own best banker, and, by the diffusion of her gold in sands and streams, contrives always to keep due "Metallic Reserves," as a financier would say. Though half the world should run upon her for gold at one time, her bank would not break; she has means of preservation which none could defeat.

Among these are the operations preliminary to the procurement of gold, even when it is under our feet. These necessary preliminaries check avarice and interpose delay. They may be arranged under three heads: 1, *The washing*; 2, *the trituration*, or reduction in size; and, 3, *the separation* of the useful from the waste.

1. *The washing* of gold may proceed from the simple gold-washer's bowl (or "vanning dish") up to higher machinery. The bowl is constructed of hard, close-grained wood, and is circular in Brazil, and oval in parts of Transylvania and Hungary; the size varying from three feet in diameter to small ovals of a foot in length, as used in Mexico. Sometimes this bowl is used for washing auriferous alluvium, but more commonly as a means of assaying, or for the purpose of still further cleansing and separating the particles of gold, as they are brought from some other of the concentrating processes. The settlement and separation of the gold is partly assisted by striking one end of the full bowl, after it has been shaken from side to side and circularly, so as to arrest the course of the particles for a moment; and, finally, several different layers or lines of mineral matter may be

distinguished from one another, the gold occupying the lower position. The Gypsies in Transylvania employ simple contrivances for gold washing. A board of six or seven feet in length, and with a number of notches or grooves cut across it, is placed in an inclined position, or a similar board is covered with rough cloths, or two or three shorter grooved boards are placed in a sieve, and the auriferous sand, mingled with water, is made to flow evenly downward from the top, whilst the metallic particles, caught in the grooves, or in the cloths, are afterward concentrated in the separating bowl. The sands of the Rhine contain, in a part of its course, gold in small proportions, and a similar mode of washing is practiced there. By various simple arrangements, a proper assortment of sizes of ores may be obtained, but at a considerable outlay for wages, as a boy must be placed at each of the gratings and sieves usually employed, to pick over the coarse stones which refuse to pass through his particular sieve. To save the outlay for wages, different means of effecting the same object, with less manual labor, have been adopted; as, for example, inclined cylindrical sieves, employed in some of the Russian gold washings, set in revolution by an axis, and by the aid of a constant flow of water, allowing the small material to pass through into a sloping table beneath, but pouring out the large stones at the lower end of a cylinder. To suit thick and tenacious deposits, circular sieves are employed, in some of the large Russian machines, where the earth is continually worked up with traveling-knives. It is evident that a very different amount of labor and skill will be required for ores, or "stuffs," as they come from different localities; and the modes of application will likewise vary, from a mere fall of water, of a few inches in height, under which the fragments are moved to and fro, to a variety of apparatus, such as we have alluded to, in which manual labor is greatly saved, and by which either a simple or compound sorting is simultaneously effected. Much, too, will depend on the comparative richness or poverty of the auriferous deposits themselves. The poorer deposits require finer washing.

2. As to *trituration*—so necessary and costly in the mines of some metals, as copper, tin, and lead—Nature herself has performed the task in the case of alluvial

gold. She has, long ages ago, abraded the highest and richest parts of the veins in the gold-bearing rocks, and so triturated and washed the precious contents, that the human "streamer" of gold merely completes what she has more than half effected. It is different, however, in the case of quartz containing gold; here the same course must be pursued as in the trituration of copper, tin, lead, etc., in several veins; and these quartz deposits may therefore be regarded as Nature's auriferous reserves—her uncoined bullion. The simplest method of trituration is to bruise and break down the ore by hand, with a heavy flat piece of cast or wrought iron, attached to a short handle, and known in mining districts as a *bucker*; but in most cases a *crusher*, or *grinder*, must be employed. These are machines best known in England, and to be seen at work in complicated forms at the lead mines of the North of England, in simpler forms in Cornwall and Wales. The principle is that of a pair of rollers of thick cast-iron, almost in contact, and revolving towards the space between them into which the ore is thrown. They are worked by steam or water-power, more rarely by wind-mills, or on a small scale by horse-power, or by hand. Every one who looks over the advertisements of the journals of the day, must observe how many wonderful quartz-crushers are, or have been, advertised for California and Australia; and one eager inventor is weekly assuring us, that by his quartz-crusher an *infant* may crush—we forget how much a day. Unhappy race of infants, if the coral and the rattle are to be abandoned for the quartz-crusher! We have seen something of crushers in various forms, from Berdan's American hemispheres (only a year or two ago most popular) to later inventions. We have seen Berdan's crusher operate upon a Cornish oxide of iron, named *gossan*, and produce certain grains of gold in a few minutes; and we had wonderful accounts from Cornwall and Devon of large stores of auriferous gossan. Gossan-crushing companies sprang up, and shares were at a premium; and one of our own friends became rich (by *anticipation*) in the possession of auriferous gossan on her Devon estate. These things we have had and heard within the last five years. But where and what are they now? Simply *crushed*, without the crushing machines! In truth, all these sudden discoveries and

announcements are only illusory to the unwary and unscientific. The knowledge of a few facts would dispel the illusions. In California it has been found that a vein of auriferous quartz, to be remunerative, should yield at least £7, 5s. of gold per ton of quartz; but of all the quartz-crushing machines set up in California, scarcely more than one-third (we conjecture) are used for mines which are yielding for any lengthened period as much as £6 per ton. We should add, that M. Chevalier and others are far more sanguine than we ourselves are in respect of quartz-crushing; but with reference to gossan-crushing in England, the cost vastly exceeds the gain.

3. The *separation* embraces the most difficult set of processes in the preparation of ores. The sole principle, guiding us through all, is the difference of specific gravity between the valuable and the worthless substances; the heavier the metal we propose to separate, and the lighter the waste, the more readily and completely will the operation be effected. The action of the numerous contrivances adopted depends either on the suspension of the fragments in water, and the consequent fall of the heaviest to the bottom; or in the flow of a stream of water down an inclined plane, depositing the heavier particles first, and carrying the lightest away with it to the lower end of the plane. Among these is the *cradle* introduced from Virginia and Carolina into California, and thence to Australia. It is mounted on rockers, so that, by means of a handle, it may be swayed to and fro. The length is divided into partitions, the contents of each of which are afterward concentrated separately in a bowl. Much manual labor is required for the cradle; and, in most instances, the loss of fine gold is very great. Already, in California, some of the sand has been operated upon a second, and even a third time, with advantage.

Various kinds of machines have been invented and tried one after another at the Russian gold steam-works; and one or more have been found very effective. A Siberian machine is able to operate on two hundred tons of stuff a day, with the labor of eight horses, twenty men, and six boys, including ten men for removing the waste, if in a level country: it is, however, rather too complicated for general use.

The above-noticed apparatus will turn

out the gold still so much mixed with other substances, (as magnetic iron, pyrites, etc.,) that it requires to be further purified. For this purpose an uncovered table or frame is used, (in Siberia,) which is divided into an upper and lower part by a lath nailed across the bottom; and the workmen standing upon it mixes the sand with water, and gently moves it against the current with a wooden hoe or rake (*colrake*.) The gold thus arranges itself chiefly near the head-board of the frame; and when a certain amount is deposited, he rakes it with his hoe so as to draw the waste particles over the lath, without disturbing the richer deposit. This process, with variations, being repeated, the resulting gold dust may be dried, and freed from any remaining magnetic iron by a magnet.

It is surprising how very poor ores can be made profitable by adequate skill in the above process. Certain ores at Schemnitz, in Hungary, have to be broken from the solid veins, at depths extending to 200 fathoms (1200 feet.) The total quantity stamped (by stamps like huge pestles in mortars) was, in 1842, about 40,000 tons, and the average of the useful metals extracted from fifty tons was: gold, 3 oz.; auriferous silver,  $3\frac{1}{2}$  lbs.; lead,  $8\frac{1}{2}$  cwt.; the ratio of gold to the other materials being here only as one part to half a million. In another mine (Siglisberg) the ratio of gold was one part in 760,000; and of auriferous silver, one part in 24,000.

From Erman's Visit to the Siberian mines, we learn that the ores of Beresov yield about  $\frac{1}{100000}$  of their weight of metal, and give not more than  $\frac{1}{100000}$  to the first washing. In other Siberian gold districts the produce was  $\frac{1}{100000}$  of gold; and in some rich beds,  $\frac{1}{3750}$ , and  $\frac{1}{1000}$  of gold. These instances will show the different proportions for different countries and mines. The sand of any river may be considered worth washing for gold, if it will yield twenty-four grains of gold *per* cwt. of sand.

Let us obtain a glimpse of affairs as they are in active operation at the Victoria diggings, afforded to us by Mr. Howitt, who visited Spring Creek in 1852. Speaking of these diggings, our traveler observes:

"No language can describe the scene of chaos where they principally are. The creek, that is, a considerable brook, is diverted from its course; and all the bed of the old course is dug up;

then each side of the creek is dug up, and holes sunk as close to each other as they can possibly be, so as to leave room for the earth that is thrown out. These holes are some round, some square, and some no shape at all, the sides having fallen in as fast as they are dug out. They are, in fact pits and wells, and shapeless yawning gulfs, from ten to thirty feet deep. Out of these the earth has to be drawn up in buckets, and some wind them up with windlasses rudely constructed out of the wood that grows about; and others haul it up with blocks and pulleys. The diggers generally ascend and descend by a rope fastened to a post above, and by holes for their feet in the side of the pit.

"Many of these holes are filled, or nearly so, with water filtering from the creek. It is black as ink, and has a stench as of a tan-yard, partly from the bark with which they line the sides of their holes. In the midst of all these holes, these heaps of clay and gravel, and this stench, the diggers are working away thick as ants in an ant-hill. You may imagine the labor of all this, and especially of keeping down these subterranean deluges of Stygian water.

The course of the creek is lined with other diggers washing out their gold. There are whole rows, almost miles, of puddling-tubs and cradles at work. The earth containing the gold is thrown into the puddling-tubs, (half-hogsheads,) and stirred about with water to dissolve the hard lumps, when it is put through the cradle, and then washed out in tin dishes. It is a scene of great bustle and animation. We saw some parties who had washed out in the course of the day 1 lb. weight of gold, others 5 or 6 oz.; and most of them had some golden results."

Mr. Howitt elsewhere says:

"If any one at home asks you whether he shall go to the Australian diggings, advise him first to go and dig a coal-pit; then work a month at a stone-quarry; next sink a well in the wettest place he can find, of at least fifty feet deep; and, finally, clear out a space of sixteen feet square of a bog twenty feet deep: if after that he still has a fancy for the gold-fields, let him come," etc.

When so great a sensation was occasioned by the announcement of the discovery of the Californian and Australian gold fields, numerous speculative companies began to arise. In 1852 and 1853 these projects were most numerous and most public: thirty or forty companies were advertised, having a nominal capital in the aggregate of about four or five millions sterling. Shares were convenient, (£1 each,) prospectuses tempting and glowing; you had only to pay £1, and to expect at least a dozen. After all, how-



ever, the sum actually sunk did not, we believe, greatly exceed a million and a half sterling—no insignificant sum, especially when some of the shares were *rigged* to as much as 100, 200, and 300 *per cent.* premium. Large dealings in these fictions led to large personal losses. The history of these schemes is one unvarying record of failure. Only one of them, as far as we can ascertain, paid dividend. Had the money been fairly expended, some gold might have been got; but the majority of the schemes were flimsy and unreliable, and were developments of the spirit of speculation, a repetition of the railway *jobs*, and utterly unworthy of credit. Let us hope they will never be again attempted. An acquaintance with the real nature of auriferous deposits, and with the great difficulty in making distant quartz-crushing remunerative, will, we trust, open the eyes of those who have earned gold, and prevent them from throwing away the possessed for the un-acquired and uncertain.

With a word or two on gold in Great Britain and Ireland we must conclude. As we have in many parts of our own island favorable geological conditions for gold, so we have gold itself. About the year 1796, considerable excitement was produced by the discovery of some large specimens of native gold in alluvial soil, in the county of Wicklow, Ireland. Gold to the value of £3675 has been obtained, but the cost of the labor is said to have exceeded that sum considerably. One of the masses weighed twenty-two ounces. We have visited the gold locality of Wicklow, but scarcely a quillfull can now be obtained for the manufacture of small jewelry.

In Scotland, a considerably quantity of gold was procured in the Lead Hills in the days of James IV. and James V.; in the reign of the latter the amount was

said to be worth £300,000. In another locality the Scotch explorers found, we are told, a piece of thirty ounces' weight. King James VI. expended about £3,000 sterling, (a large sum in his day,) in searching for gold on Carnwath Moor, but he only obtained about three ounces, worth nearly £12. We also find that some £20,000 was expended in the Lead Hills to obtain less than £5,000.

In Cornwall, small quantities of gold have been picked up from the earliest times, particularly in the alluvial tin works. In the reigns of Edward I. and Edward III., between three and four hundred miners were employed in the gold works of Combmartin, in Devonshire. A year or two ago, as noticed above, a kind of mania lasted for a short time in relation to the extraction of gold from an ochreous oxide of iron, (gossan,) abundant in Cornwall and Devon. Little or nothing has been heard of gold from these sources, but some works have been relinquished with enormous loss.

The gold of Merionethshire and some other parts of Wales has alternately raised and falsified the hopes of many. A specimen of Welsh gold-rock in the British Museum seems very rich; but few speculators in these things appear to be aware of the very obvious truth, as we should think, that one rich specimen of gold proves little more than is contained in itself. There may not be many like it in the vicinity. A friend of ours had a specimen of this kind—and from Wales, we believe—lately put into his hand by a mineralogist, who remarked, "This identical specimen has already ruined three or four companies." For ourselves, we have very small expectations of the present profitable working of any gold-rock, so called, in our own islands—at least, on any large scale. Recent information has confirmed our views.

From the Dublin University Magazine.

## WONDERS OF THE STEREOSCOPE.

"Time was," says a recent writer, "when it would have gone hard with any one who showed pictures of men and scenes that neither pencil, brush, nor hand had touched; and if, in defense, it had been asserted that the sun itself had traced them, the tortures of the rack would have been had in requisition to force the inventor to confess himself a wizard, and to tell his terms of compact with the devil; and even in our own time, though we have passed from the demonism," there is still something mysterious and awful associated with the term science in the minds of many. It is regarded as something which can be successfully prosecuted only by those who spend a kind of monkish life among books and instruments, in the cloistered halls of a university. Many men regard it as that which, because of its wondrous revelations, they are bound to respect and admire, but which they need never hope to understand; since none but those who have enjoyed the most finished education, who are possessed of a scientific taste, and who are placed in peculiarly favorable circumstances, can prosecute it successfully.

This opinion, though common, is erroneous; for, whilst it is true that men in the circumstances imagined have been ornaments of science, and by their researches into the arcana of nature have immensely increased the stores of human knowledge, and conferred incalculable benefits on their race, it is equally true that there have been men who possessed none of these advantages, but who, while contending with the privations and hardships incident to a life of poverty and toil, have successfully prosecuted the study of science, and risen to the highest eminence as philosophers. Dolland was a Spital-fields weaver, and the elder Herschell was once a blacksmith. What is science? It is knowledge—knowledge reduced to a system; that is, arranged in a regular order, so as to be conveniently taught,

easily remembered, and readily applied. Now, science thus defined is patent to all men—to the workman at his forge or his loom, as well as to the prince in his palace. The humble artisan may be influenced with a thirst for its acquisition, as well as the most dignified and noble, and may, from the sources which are around him, acquire a knowledge of its wonders. Being possessed of fewer facilities, he may not acquire it so rapidly; but if possessed of a reflecting and inquiring mind, he may, from the opportunities enjoyed by the very humblest in our country, arise, like many before him, to no mean eminence as a scholar and philosopher, and may by his discoveries, like another Watt, become a benefactor of the human race. Although the fundamental lessons of science may to many, at first sight, wear a forbidden aspect, because to understand them requires an effort of the mind, somewhat, though certainly not much, greater than is requisite for understanding more ordinary matters; yet it is pleasing to reflect that, in consequence of the increasing enlightenment of the age, and the now general teaching of the elements of science in our schools, its study is regarded as less formidable. The false impressions in regard to it are fast dying away, and a taste for scientific investigation is being diffused among all classes of the community. Thousands in all ranks of life have tasted the gratification which her investigations can impart; and feeling not only that the possession of knowledge gives power, but that the acquisition of it confers an exquisite and elevating pleasure, are studying eagerly her wondrous revelations, and adding by their discoveries to her already multitudinous treasures. Many valuable papers on scientific subjects are furnished to our journals by working men. Some of them are studying in the intervals of labor the higher mathematics, and many of them are constructing as an amusement philosophical

instruments of the highest class. We have seen specula of nine, and even twelve inches diameter, and achromatic lenses of four and six inches aperture, constructed by working men. These things are hopeful in the highest degree, and lead us to believe that such tastes and pursuits will spread, and tend powerfully to wean many of our artisans from those degrading and demoralizing habits by which, unfortunately, too many of them are distinguished. They lead us to believe that the time is approaching when the wondrous works of the Creator will be investigated, not merely, as hitherto, by comparatively few inquirers, but by thousands and tens of thousands of earnest and accomplished students; and consequently every day, through their researches, new illustrations of His wisdom, power, and love will be obtained. Already, in consequence of the taste which exists for science, and the greater acquaintance with its teachings which prevails, any scientific discovery produces a greater impression upon the public mind than it would formerly have done; and not only so, but it confers a far larger measure of public good. If it is a discovery which from its nature is calculated to be of practical benefit, so soon as it is made known, there are thousands of able and accomplished minds which hasten to contemplate it in all its relations and aspects, and to educe from it the practical benefits it is calculated to bestow upon society. If from its nature it be of comparatively small practical advantage, that little is speedily secured, and pleasure and benefit of no mean kind are obtained, by the amount of mind which is exercised and strengthened by the investigation, and so qualified for higher and, it may be, more important researches. An invention, though not in itself of great importance, by setting many minds to reason and inquire in a particular direction, has often led to the most important and valuable discoveries.

The Stereoscope, the subject of this paper, more than any other scientific instrument, is calculated to foster this growing love of science in the public mind, since its wondrous illusions, its life-like creations, are calculated to confer pleasure on men of every class and character. Many, in order to master its principle of operation, have been led into the most recondite branches of optical science, and by their researches have acquired an intimate

knowledge of the physiology of vision. Its invention, and the discussions which have arisen in regard to it, have done more to extend our knowledge of the manner in which external objects are perceived by the mind, than any other discovery in modern times. Its practical applications have not only been perceived by theoretical writers, but have been seized upon by earnest and practical men, and are now carried out on a stupendous scale. So generally is it now employed over the world, that it has been estimated that upward of half a million of these instruments are in use, imparting instruction and amusement to men in all ranks and conditions in life. One commercial company, the London Stereoscopic Company, has already produced upward of 100,000 binocular slides, by which almost every thing grand and beautiful in the world is brought to our firesides:

"Photographers are now employed in every part of the globe in producing pictures for the instrument—among the ruins of Pompeii and Herculaneum—on the glaciers and in the valleys of Switzerland—among the public monuments in the Old and the New World—amid the shipping of our commercial harbors—in the museums of ancient and modern life—in the sacred precincts of the domestic circle—and among those scenes of the picturesque and the sublime which are so affectionately associated with the recollection of our early days, and amid which, even at the close of life, we renew, with loftier sentiments and nobler aspirations, the youth of our being, which, in the worlds of the future, is to be the commencement of a longer and a happier existence."\*

The Stereoscope is the invention of Professor Wheatstone, and was first described by him in "A Memoir on some remarkable and hitherto unobserved Phenomena of Binocular Vision." Mr. Wheatstone afterward communicated an important paper on "The Physiology of Vision," to the British Association at Newcastle, and exhibited his instrument, which he called a Stereoscope, (from *στερεος*, solid, and *σκόπειν*, to see,) by which he united two dissimilar pictures of solid bodies, and thus reproduced, as it were, the bodies themselves. At the time he exhibited his instrument, Mr. Wheatstone believed that the dissimilarity of the images of a solid seen by each eye was a fact which had hitherto been unobserved,

\* "The Stereoscope," by Sir David Brewster.

and was, consequently, a new discovery. There can be no doubt, however, that this truth was known and published by ancient mathematicians. Euclid knew it more than 2000 years ago, as is manifest from the twenty-sixth, twenty-seventh, and twenty-eighth Theorems of his *Treatise on Optics*. Galen, the celebrated physician, not only knew the fact, but shows by diagrams the manner in which we see a body when we look at it with both eyes, and with each eye alternately. Baptista Porta, the Neapolitan philosopher—Leonardo da Vinci, who united in a remarkable degree a knowledge of art and of science—Francis Aguillon, or Aguillonius, a learned Jesuit—and others among the ancients, not only knew the fact of the dissimilarity, but in their endeavors to explain how two dissimilar pictures, when united, did not give a confused and indistinct picture, were frequently within a hairbreadth of the theory of the stereoscope, and the truth. Mr. Harris, Dr. Smith, and Dr. Porterfield, in recent times, had attentively studied the subject of Binocular vision, and were intimately acquainted with the fact of the dissimilarity of the pictures formed in the right and left eyes. But the gentleman who made the nearest approach to Mr. Wheatstone's discovery was Mr. Elliot, now teacher of mathematics in Edinburgh. Having been led to study the subject of Binocular vision, in order to prepare an essay for the Logic class in the University of Edinburgh, "on the means by which we obtain our knowledge of distance by the eye," that gentleman, so early as 1823, became aware that the relief of solid bodies was produced by the union of the dissimilar pictures of them. In 1839, Mr. Elliot, ignorant of Mr. Wheatstone's discovery, prepared two dissimilar pictures of a landscape, one as seen by the right eye, and the other as seen by the left. Placing them at the end of a box eighteen inches long, and squinting at them from the other end, the pictures were united, and the effect of different distances and of solidity was obtained. This simple stereoscope was shown to several scientific friends, but as photography did not exist, and no method was known of producing good binocular pictures, the contrivance was deemed by Mr. Elliot one that would not be very popular, and was carried no farther. When aware of Mr. Wheat-

stone's discovery, Mr. Elliot made known the result of his previous investigations, without any intention of depriving Professor Wheatstone of the credit which was justly due to him, but merely as a curious piece of scientific history.

When Mr. Wheatstone read his paper, and exhibited his instrument, before the British Association at Newcastle, Sir John Herschell characterized the discovery as "one of the most curious and beautiful for its simplicity in the entire range of experimental optics." As may be supposed, a discussion of great interest took place, in which Sir David Brewster and Professor Whewell took part. Mr. Wheatstone, in his paper, endeavored to explain the rationale of the operation of his instrument, by supposing that the retina in the human eye was possessed of the power of forcing into coalescence pictures and drawings of considerable dissimilarity. In this opinion he was joined by Dr. Whewell, who held, that in uniting or causing to coalesce into a single resultant impression two lines of unequal lengths, the retina had the power either of contracting the longest, or lengthening the shortest—a supposition in every way extraordinary. On the other hand, Sir David Brewster argued that the attributing of such power to the retina was altogether unnecessary, as the most satisfactory explanation of all the stereoscopic phenomena was obtained by the law of visible direction. Without entering upon the interesting but somewhat abstruse controversy which ensued between these philosophers, we may state that the view of Sir David Brewster then stated has been fully borne out; and the law of visible direction is almost universally allowed to explain the striking and beautiful effects which are produced by the stereoscope. The philosophy of the stereoscope has engaged the attention of the most able physiologists and metaphysicians—such as Buecke, Voldman, Morer, Tourtual, etc.; and the fact is now established, that we have the impression of solidity when we look at properly united pictures of a solid, because we see precisely what we would have seen if we had looked at the solid itself.

The original instrument of Professor Wheatstone consisted of two plane mirrors set at right angles to each other upon the middle of a board, and joined together by their common edge. The geometrical



figures or drawings are placed on adjusting supports at the extremities of the board, and the instrument is used by placing the face as close as possible to the mirrors, when the reflected images are seen one by each eye. By a slight adjustment of the pannels on which the pictures are placed, the images can be made to unite or coincide at the intersection of the optic axes, and so produce the stereoscopic effect. The figures to which Professor Wheatstone applied his instrument were pairs of outline representations of objects of three dimensions—such as a cube, a cone, or the frustum of a square pyramid. These were employed without shading or coloring, lest it might have been imagined that the effect was in any way dependent on these circumstances. Photography being then unable to supply such pictures as were requisite, the instrument of the learned professor never attracted much notice.

As the stereoscope of Professor Wheatstone could not be used conveniently, was far from portable, and required considerable nicety of adjustment, Sir David Brewster was led, in 1848, to construct one on an essentially different principle, viz., by refraction. It is extremely simple in principle, and satisfactory in its performance. It has been called by its distinguished inventor the Lenticular Stereoscope, from its being composed of a convex lens of five or six inches focus, such as the lens of a pair of spectacles, which is cut through the middle, and mounted in a box, with the thick edges outermost, and two and a half inches apart. The operation of the instrument, and the manner in which the pictures are displaced, may be easily illustrated by a simple experiment. If such semi-lenses as we have described be held by the finger and thumb of each hand, and we look through them with both eyes at two wafers laid upon a piece of white paper about two and a half inches apart, two images of the wafers will be seen; by turning either of the semi-lenses, we will perceive that the image of the wafer opposite to it is displaced; by continuing to turn, we perceive that we have the power of making the two images advance to, or retire from each other; and can, when the lenses are in a certain position, make the one image *exactly lie upon and cover the image of the other*. When this result is accomplished, it will be found that the two diameters of bisection are outermost, which is

consequently the position of the lenses of the stereoscope. A stereoscope, it is manifest, therefore, is nothing more than an instrument which enables us to squint without effort or inconvenience, as is proved by the fact that many, by a little practice, can witness the stereoscopic effect from binocular pictures, simply by uniting them with their eyes, or, in other words, by squinting.

The form which has been given to the Lenticular Stereoscope by its distinguished inventor is exceedingly simple and elegant, and need not be particularly described, as every one is familiar with it. It consists of a pyramidal box, blackened inside, and having a lid or door in one of its sides for the admission of light when required. The lenses are mounted in short tubes, which are fastened in the top of the box, and can be slightly separated from each other to suit the eyes of different observers. The tubes can also be drawn out, or pushed in, for the adjustment of focus. At the bottom of the box there is a groove, into which the sides containing the binocular pictures are placed. The finer instruments have a transparent bottom for viewing slides seen by transmitted light. Stereoscopes of the form described are now made in prodigious numbers, of all kinds of materials—wood, papier maché, brass, tin-plate, etc., and may be had at prices ranging from half a crown to five or six guineas.

Sir David Brewster has invented several other stereoscopes, which are of considerable practical utility, though all of them are inferior to that described.

1st. The Tubular Reflecting Stereoscope, which is essentially the instrument of Professor Wheatstone, with small metallic specula instead of the large glass mirrors employed by the professor.

2d. The Single Reflecting Stereoscope, adapted only for symmetrical figures, in which we look at the drawing with one eye, and at its inverted image reflected from a plane mirror with the other.

3d. The Double Reflecting Stereoscope, which is the former instrument in a duplex form.

4th. The Total Reflection Stereoscope, an extremely ingenious instrument, and possessed of valuable properties, since by one diagram or picture of a solid, the other diagram or picture, which is to be combined with it, is created by total reflection from the base of a prism.

5th. The Single Prism Stereoscope, in which one eye looks directly at the picture opposite to it, while the other, looking through the prism, has its picture made to lap upon or coalesce with the first, and to produce the effect.

As we have already stated, the eyes themselves form a stereoscope to those who have the power of converging their axes to points nearer than the objects they contemplate, or, in other words, of squinting. It is obvious that by applying short telescopes to the eyes, and converging their axes to a point nearer than the objects surveyed, a stereoscope is produced. This form has also been suggested by Sir David Brewster. The telescopes may be made either with convex or concave eyelenses, and need not exceed a couple of inches in length. Telescopic Stereoscopes have recently been fitted up by Mr. Bryson, Optician, Edinburgh, on the principle recommended by Sir David, in an exceedingly ingenious and useful form. The joint by which the telescopes are united, and which is Mr. Bryson's invention, can be elongated or contracted in azimuth, so as to suit the distance between the eyes of different individuals, and it can at the same time allow the axes of the telescopes to be directed to any point. If two binocular pictures of large size be placed before an observer at the distance of five or six feet, and be surveyed by this instrument, the observer requires only to adjust the axis of each telescope till the image of the one picture coincides or coalesces with that of the other, when the effect is complete. When the transparent slides now produced are placed in a couple of magic lanterns, and immensely magnified on a white wall or screen, and then united with the telescopic stereoscope, the effect, we believe, is charming beyond all description. So exquisite are many of the pictures, that they admit of being magnified at least fifty diameters, and when united with this amplification are, we are told, strikingly grand and beautiful. We have little doubt of this instrument coming into general use, since it enables us to unite with ease pictures of any size. The only other of the many forms invented by Sir David Brewster which we need notice is, the Microscopic Stereoscope, which, in the words of the inventor, "is admirably fitted for its application to small and microscopic objects, and may be carried in the pocket." It is simply a Lenticular Ste-

reoscope, the lenses of which are of very short focus.

Several other forms of the stereoscope have been recommended, which are not in any way particularly worthy of notice, as they are all modifications of the instrument of Sir David Brewster, and possess no advantage either in form or arrangement over that which he at first produced. None of them has ever come into general use, while the original instrument has found its way into every corner of the globe, and in its simple elegance of form is already stereotyped on the human mind.

Since the invention of Sir David Brewster, various kinds of stereoscopes have been proposed and constructed. Instead of semi-lenses, prisms of small angle have been employed, which of course displace the pictures. This, however, can hardly be called an invention, since the semi-lenses of Sir David are nothing else than prisms, which, while they displace the pictures, at the same time magnify them—a property which we shall see to be absolutely indispensable to the perfection of the illusion produced by the instrument.

A gentleman in Dundee, Mr. E. Scott, has recently patented an instrument which he alleges to be superior in its performance to that of Sir David Brewster; but how it can possibly be superior is a problem we must leave for Mr. Scott himself to solve, as the two instruments are to all intents and purposes the same. Instead of employing semi-lenses or quadrants, Mr. Scott employs two entire lenses of two inches diameter, which have their centers placed more than two and a half inches apart. In this position they displace the pictures in precisely the same way as the semi-lenses of Sir David Brewster, when their diameters of bisection are outermost; but it is manifest that the employment of entire lenses serves no other purpose than to increase the price of the instrument, since only a small portion of a lens, held near the eye, can be seen through at once. Sir David, in his instrument, employs only the portion necessary; Mr. Scott retains the unnecessary part, and calls his retention of it a new invention! By employing quadrants of a lens, one lens can make two complete stereoscopes of precisely the same focus, frequently a great advantage; while Mr. Scott, from two complete lenses, produces only one instrument.

Before proceeding to point out the educational and artistic applications of the stereoscope, we shall give a very brief and popular description of the principle of its operation. To do so, it is necessary to understand the general structure of the eye, and the laws of vision by which we see objects in the position which they occupy. The human eye is an organ by which a small but perfect picture of an external object is formed upon its inner posterior surface, which picture is perceived by the mind in a way that never has been, and probably never will be, explained. All visible objects radiate, or throw out in all directions particles or rays of light, by means of which we see them directly, by the images of them formed in the eye. Now it has been proved by accurate experiments, that in whatever direction a ray falls upon the retina, it gives us the vision of the point from which it proceeded, in a direction perpendicular to the retina at the point on which it falls. This is called the law of visible direction.

Another important fact connected with the theory of vision is, that when we look at an object we can only see one point of it distinctly at any instant, namely, when the focus of the eye is adjusted for the vision of that point, and its image is formed on the point of distinct vision on the retina. But although we can only see one point distinctly at any given instant, we can, with the greatest rapidity, obtain the most correct knowledge of the form and color of an object. This is done by the eye with almost infinite rapidity running over the different points which compose the object, and conveying a clear and definite impression of each to the mind. There is no finer proof of the admirable mechanism of the human eye than this fact which we have stated. So admirably is it adjusted, so rapid are its motions, that it runs over many thousand points of an object, such as the surface of a shilling—has a distinct motion on its axis, and movement of its lens for each point, forms many thousand pictures of the successive points for the contemplation of the mind, and all in a space of time so short that it seems instantaneous. But although we see with one eye the direction in which any object or point of an object is situated, we do not see its position, or the distance from the eye at which it is placed. In monocular vision, we learn from experi-

ence to estimate all distances, but particularly great ones, by various means, called the criteria of distances—such as the interposition of different objects, the variation in the apparent magnitude of known objects, the intensity of color, the distinctness of outline, etc. It is only with both eyes that we can estimate, with accuracy, the distance of objects not far from us. This fact may be proved by any one attempting, with one eye shut, to snuff a candle, when the odds might be taken as ten to one against his doing it. If a small point of light be introduced into a dark room by another person, we have no correct conception of its distance from us. This fact of the inability of one eye to judge correctly of distance, enables us to understand why a painting or a photograph, or any representation on a flat surface, is best seen with one eye. In the painting, different parts are intended to represent objects at different distances; now, as the one eye can not judge correctly of distance, the geometrical perspective, the *chiaroscuro*, etc., give a beautiful illusion, and a certain amount of apparent solidity, making the different parts seem at distances.

These facts connected with the physiology of vision prepare us for understanding how the beautiful and startling effects of the stereoscope are produced. We have, in treating of the history of the stereoscope, stated what every one must feel to be true, that, in the binocular vision of objects, each eye sees a different picture of the same object. How is it, then, that we do not see objects double? Simply in consequence of the law of visible direction. The axis of each eye is directed to the same point, and consequently the image formed by one eye exactly lies upon, and covers the image formed by the other, and hence a single impression is obtained. The following illustration will make plain this important optical law. If a person, seated in a dark room, direct his eyes to a small hole in the window-shutter, an image of the small luminous aperture will be formed in each eye, but only one hole will be seen, because the axis of both eyes are directed to the same point, namely, the hole; at which the lines of visible direction cross each other, and at which the image formed by one eye exactly covers the image formed by the other—giving a single impression. If the axis of one eye be altered by pressing

the eye-ball with the finger, immediately two images will be seen. If a man had a thousand eyes instead of two, in consequence of this law, although a thousand images were formed, only one object could be seen. Now, when with both eyes we look at any object—say a shilling—the axis of both eyes are directed to a point on its surface, which point is seen singly, in consequence of the law of visible direction. The mind having examined it, the eyes are directed to another and another point, with the utmost rapidity, till the most correct impression in regard to the whole surface is obtained. The most important advantage which we derive from the use of both eyes is to enable us, if we may so speak, to see distance, or a third dimension in space. This power of forming the most correct ideas of distance is not, as in the case of vision with one eye, the result of experience, or by means of the criteria referred to, but is unquestionably in consequence of the successive convergency of the optic axes to points at different distances from us.

If, therefore, two plane pictures of a solid object are prepared, one as seen by the right eye and the other as seen by the left, and their images are united, or made to coalesce, by squinting, or by the stereoscope; it is obvious that when we look at them with both eyes, the mind surveys the successive points in precisely the same way as it would have done if with both eyes we had looked at the solid itself, and consequently the most perfect idea of relief is obtained.

Every one who has looked at proper dissimilar pictures through a good stereoscope, must have been struck with the perfection of the illusion. The idea of a flat surface only being before us is utterly annihilated, every object is felt to be before us in all the roundness and solidity of nature and of truth. It is of the highest importance that the pictures to be combined in the stereoscope should be perfect in their delineation, and properly dissimilar. But for the invention of photography, these desiderata could not have been obtained, and the stereoscope could never have been of great practical value, since no artist could have produced pictures sufficiently perfect to produce the wondrous effect. The simultaneous invention of photography and the stereoscope must, therefore, be regarded as a circumstance in the highest degree for-

tunate. Photography having now reached a very high degree of perfection, pictures possessed of the greatest beauty can now be readily produced by the exquisite pencil of Nature herself. It is, however, greatly to be regretted, that the only method by which absolutely perfect stereoscopic pictures can be produced has not been generally adopted. Photographic artists have sacrificed every thing like truthfulness and accuracy to rapidity of execution. It is obvious that a lens of large aperture and short focus will imprint a picture in a much shorter time than a lens of equal focus but of small aperture. Now artists have clung pertinaciously to the employment of large lenses, simply on account of their rapidity, and the clearness of the pictures they produce, although it has been demonstrated again and again, that large apertures can not possibly give accurate representations of "the human face divine" or of any thing else. Sir David Brewster has shown that a lens of three inches aperture gives no fewer than one hundred and thirty dissimilar pictures of a sitter, which are all huddled and jumbled together in the monstrosity which it produces. When lenses of nine, twelve, and thirteen inches aperture are employed in photography, can we wonder that people are disappointed with the hideous representations which are handed them, or be surprised at the numbers of photographic failures we daily witness? Nature points out to us the simple rule which, in this department of art, ought to be followed. From infancy we have seen every object through an aperture of one quarter of an inch, the diameter of the pupil of the eye; such ought therefore to be the aperture of the lens employed in taking all photographic pictures; for this plain and palpable reason, that if we employ a larger aperture, it produces not such a picture as we have been accustomed to see, but such a picture as we would have seen if possessed of a monstrous eye of the dimensions of the lens employed:

"Photography," says Sir David Brewster, "can not therefore even approximate to perfection till the artist works with a camera furnished with a single quarter of an inch lens of rock crystal, or, what experience may find better, with an achromatic lens of the same aperture. And we may state with equal confidence, that the photographer who has the sagacity to perceive the defects of his instrument, the hon-



esty to avow it, and the skill to remedy them by the applications of modern science, will take a place as high in photographic portraiture as a Reynolds or a Lawrence in the sister art."

If one picture be imperfect from the cause we have stated, it is manifest that the stereoscopic union of two such pictures will not give a pleasing or natural result. The errors can only be increased by the coalescence in the resultant image. When, however, dissimilar pictures taken with proper lenses, and at the proper angle, are combined in a good instrument, the effect is absolutely wonderful. The illusion is so complete that the observer feels certain that he is not looking at a flat surface, but at a living man or an actual scene, in which the different dimensions in space are given with inimitable fidelity. A single glance through a good instrument at a picture taken as we have described, will disgust him ever after with the rubbish which is commonly sold as stereoscopic slides, and which are filled with all manner of exaggerations.

Another point of great importance in the production of stereoscopic pictures is taking them properly dissimilar. Here also great exaggeration and error have crept into general use, from a desire to produce startling effects. Here also nature has given us the rule which ought to be adopted. The separation she employs in giving the solidity and relief which we witness when we contemplate the objects around us, is two and a half inches, the distance between the human eyes. Now if we want to reproduce such a picture when look into the stereoscope, as we would have seen had we stood on the spot where the picture was taken, we must employ such a separation between the centers of the lenses. It is obvious that any separation, greater or less, will produce an exaggeration, of a positive or negative kind. By increasing the separation, the relief is exaggerated, and in many subjects a startling effect is produced; but all such exaggerations are utterly inadmissible in any thing like art. Some artists of the higher class employ a separation of two and a half inches for portraits, or objects taken within eight or ten feet distance, but employ a greater separation for landscapes, and all distant objects. Although in the latter case the error is so slight as scarcely to be perceived, yet there can be no doubt it is better to

follow rigidly the rule which nature points out.

The instrument by which the best stereoscopic pictures is produced is the Binocular Camera of Sir David Brewster, which consists of a single box, with lenses of the same aperture and focus placed in it, at two and a half inches apart; so that the pictures are taken at the same time with the same intensity of lights and shadows, and at the proper angle of separation. To secure the lenses being precisely similar, Sir David bisects a lens of rock crystal or a small achromatic, and having cut the semi-lenses into circles, mounts them in the camera as separate lenses. When stopped down to one quarter of an inch aperture, such an instrument produces binocular pictures in which the most rigid examination can not discern any error.

We come now to consider the applications of the stereoscope.

There are few philosophical instruments which are calculated to be of greater practical value than the stereoscope, or which can afford a purer or more rational pleasure to the mind. The telescope and microscope open up to us worlds of surpassing grandeur and beauty, the one showing us the boundlessness of the universe, and the other unfolding to our view the infinite richness and variety of the works of the Creator. But these wonderful instruments, from their nature, as well as from the difficulty and expense of their construction, can afford pleasure and instruction to but a comparative few. It is only the enthusiast in astronomy who has patience to watch night after night in our treacherous climate, and who has besides a first-rate instrument at his command, who can hope to be rewarded with an occasional glimpse of the wondrous celestial phenomena. And it is only the man whose wealth enables him to indulge in the luxury of an expensive compound microscope, or who can afford to purchase diamond or sapphire lenses, who can successfully prosecute researches into the domains of the microscope. The stereoscope, however, is an instrument which any person of moderate mechanical skill can construct for himself in a few hours, or which can be purchased for a few shillings, and which, in its rudest and simplest form, will perform almost as well as the most beautiful and finished instrument which art can produce, or luxury demand. From this circumstance it is an

instrument calculated to afford instruction and delight to all classes.

The peasant in his humble cottage, who has heard of the wondrous monuments of antiquity, and whose mind soars above his condition, but who, by stern necessity, is chained to the soil on which he was born, can by the savings of a few days, through the wonderful power of this little instrument, cause the monuments of Egypt, and Assyria, and Greece, and Rome, as well as the labors of the most eminent sculptors from Praxiteles to Canova, to stand before him, and can drink into his soul the feeling and the beauty which they so eminently express. Though his life may have been spent in a dreary morass, or on the side of a lonely hill, the richest combinations of wood and water, and mountain, and sky, scenes of surpassing beauty in his own or in other lands, which he can never hope to see, can be made to pass before him, instilling into his mind the most glowing conceptions of the beneficence and power of the Creator of all things. The peer in his elegant saloons, and surrounded by every luxury, can recall the impressions he received, when, in the freshness and vigor of early manhood, he wandered to other lands in search of instruction and pleasure. The Rhine, the Alps, the classic ruins of Italy, and Greece, and Egypt, may successfully arise before his view with little less than their former truthfulness and reality. The poor student, born with a feeling for art, but who, like many before him, had to endure the greatest privations, and struggle with the greatest difficulties ere he could command the means to study the works of the great masters, the study of which he felt to be indispensable to his success, can at the outset of his career, by the creations of the stereoscope, have his taste corrected, his feeling for art refined, and can hope, by diligence and study, to arrive far more speedily at success in his profession. The classical student, too, who has devoted himself to the study of the literature of Greece or Rome, but whose circumstances utterly preclude the idea of his ever visiting the scenes amid which the men whose works he studies thought and spake, can gaze in his study on the Forum or the Acropolis; he can raise up, as if by a magician's power, the very localities in which Demosthenes thundered and Plato taught. Their language will consequently acquire fresh

force, and their metaphors greater beauty. His philological difficulties will diminish, critical perplexities will become fewer, and fresh interest and zest in his studies will be acquired.

Although the stereoscope is only a new instrument, having been invented some nineteen years ago, and although it has as yet been applied to but few practical purposes, it requires a very limited knowledge of its capabilities, and still less imagination, to foresee the many practical purposes to which it will speedily be applied. As an educational instrument, we conceive it is hardly possible to overstate its advantages. The intelligent teacher who aims at something more than imparting to his pupils a dry detail of facts, who makes it his endeavor to educate the mind and develop the affections of his interesting charge, will at once feel that by this instrument he can not only afford high gratification, but, at the same time, convey instruction which no description, however elaborate or eloquent, could impart. Let us suppose such a teacher to be reading with his pupils Livy's beautiful description of the battle between the Romans and the Carthagenians on the banks of the Lake Thrasymene; should he, by the stereoscope in any of its forms, cause that beautiful spot, still unchanged in its grand features, to stand out before them in all its headlands and bays, and with its charming perspectives; could he point out the spot where the Carthagenians lay concealed among the rocks and crevices, and whence they at length rushed with resistless force upon the surprised legions, hurling them into the deep and sullen lake, the scene of that momentous battle, having been actually witnessed, would never be forgotten. It would ever arise clearly and tangibly before the mental view, suggesting the touching and beautiful words in which the accomplished historian relates the disgrace of his country. Every scene interesting in the history of our own or of other countries could be made to arise in all the vividness of reality before the young and ingenuous mind, indelibly fixing on the memory the incidents with which they are associated, and imparting impressions of the most correct and truthful nature. Every one interested in the education of youth must, when visiting educational establishments of no mean pretensions, have been sorry to witness the miserable daubs, or rather the

gross caricatures of nature, which are suspended around their walls, for the ostensible purpose of imparting instruction in astronomy, zoology, or botany. It is not uncommon to see the planet Jupiter represented as a large globe, painted blue with red belts. The various races of the animal kingdom are represented in colors which nature never gave them, and with limbs so proportioned and arranged, that their names under them are indispensably necessary, to give us an idea of the creatures they are intended to represent. Now such pictures, instead of doing good, are positively detrimental, for their constant exhibition before the young and sensitive mind impresses upon it erroneous and ridiculous ideas, which many years of experience, and many opportunities of seeing the living reality, can scarcely efface. Pictures adapted for the stereoscope, painted by the solar ray with inconceivable delicacy and fidelity, can be taken from the living plants and animals, which, when combined by the stereoscope, would make them stand out before the pupils as if alive, and with the most correct proportion and perspective of every part. The graceful and beautiful curves of nature, portrayed by her own exquisite hand, would convey not only deep and abiding impressions, but would awaken becoming emotions of wonder and adoration for the Divine architect. A portfolio containing illustrations of botany, zoology, and geology could be furnished (and we have no doubt will speedily be furnished) at a comparatively small expense, which would be of immense practical value in our educational establishments.

There is one class of schools—schools of design—recently established in this country, which have already exerted a sensible influence on our arts and manufactures, and which are destined to exert a yet greater in refining the national taste, by surrounding us with beautiful forms, not only in works of art, but even in the most ordinary domestic implements, in which it is evident the stereoscope is of the greatest value, and must lead to a new and improved method of tuition. In such schools of design the taste of the student is cultivated, and a correct feeling for art is endeavored to be instilled, by his copying the works of the great masters of design in ancient and in modern times. Having conquered the ele-

mentary difficulties, and having acquired a correct taste, the student is required to express, by various forms and combinations, those ideas of simplicity or beauty which his mind can conceive. To secure the objects which such excellent institutions are designed to gain, it is necessary that the student be furnished with models of the highest excellence, but these to a limited extent only can be placed at his disposal. He can not visit Greece or Italy, he can not enter the halls and galleries of our nobles, or visit the various museums in which many valuable specimens are to be found. He must be content with drawings and modelings, many of them of great excellence, but necessarily inferior to the originals. The stereoscope is eminently qualified to supply what is wanted in such institutions. By it, and at a comparatively trivial expense, the finest works of art from all parts of the world can be accumulated in each of these institutions, not indeed in their actuality, but in a manner of far greater practical utility than if the richest treasures of art were assembled in one school. The student can study, with perfect leisure and convenience, the realities standing out before him in all their perfection and beauty. The temple, the statue, the landscape, can be studied, not from the drawings of masters of the greatest eminence, but from the infinitely perfect drawings of Nature herself; made, when combined by the stereoscope, to stand out in the most perfect relief and perspective in every part. It is easy to see how a single portfolio could, at a small expense, be filled with stereoscopic slides, which would be of equal, or rather of greater, value to the student of such institutions, than a collection of works of art which it would require millions to purchase, and the largest building in existence to contain.

But the greatest advantage of the stereoscope to the student of art is, the property it possesses of presenting for his study a more perfect image in all its roundness, and solidity, and detail, than he could witness though the original object were before him. This property of the instrument is one of its greatest excellences, and can be taken advantage of for the minute and careful study of objects which, from their nature or position, are inaccessible. It is calculated to bring to light beauties which, though they exist,

have never been seen. Statues, ornamental friezes, with many kinds of architectural ornaments, elevated to an immense height from the ground, and which could only be studied by the erection of scaffolding, are brought in all their perfection before the eye of the artist. A number of views of the Sydenham Palace have been published, in which, though but about two and a half inches square, the vast extent of the building, every column, girder, and article exhibited, can be seen standing out in its place, and with as perfect solidity and distinctness as does the palace itself, and the object it contains. It seems no picture which we contemplate, but a model, inimitable in its wonderful accuracy and comprehensiveness of detail. This wonderful effect is owing to the fact, that instead of seeing the object itself, we see a miniature model of it brought close to the eyes—a model not only perfect in every detail, but every part of which is brought within the distance influenced by the angle of the eyes—so that the images surveyed actually surpasses the reality. Hitherto, colossal works of art could only be represented—first, at such a distance as enabled the eye to embrace the whole object, and discover its proportions; and then by studying the component parts at such a distance as that they could be distinctly observed. If the artist desired to study the great Egyptian Temple at Denderah, or the Parthenon, or the winged-bulls from Nineveh, he had to retire to such a distance as enabled him to see the great outline—the proportions of the whole—a distance which rendered the minuter parts of the edifice, or of the statue, invisible. After making his drawings afar off, he had to approach to such a distance as rendered visible the larger ornaments, and make his drawings at this point also. He required to approach still nearer, that the inscription or figures, with the delicate carvings, might be seen and represented. After these frequent drawings, he had to content himself with one or two examples of the multifarious details. Such drawings, even although taken by the most accomplished artists, and even although we could suppose them perfect, (which they are not,) do not contain all that is required for the perfect study of such works; for they do not show the relation that subsists between the ornamental parts and the whole. They are merely pictures at different dis-

tances, at no one of which a perfect view of the object can be obtained; whereas, by the coalescence of the images from properly-taken stereoscopic pictures, a more perfect image is formed for the mind to contemplate, than can be witnessed by the eye at any given point. It is from this circumstance that the representation of an object in the stereoscope must always be superior to the most exquisite calotype picture which can be obtained. The calotype is a picture of the object as seen by one eye from the point where it is taken; whereas, the stereoscopic picture is as if it had been seen by two eyes considerably separated from each other. It must, therefore, exhibit a greater number of parts of the object, be possessed of superior brightness, and show the proportions with greater beauty and fidelity.

But it is not only in the domain of art that the highest advantages are to be derived from the stereoscope. In literature also it may be expected to be of high practical value. The student of antiquities can obtain the most perfect representations of the various monumental inscriptions of his own or other countries, and can study them at leisure. It may be said that such representations can be obtained by photographic pictures, and that stereoscopic pictures are not necessary. But photographic pictures, however excellent, are utterly inadequate in many cases to enable the archaeologist to prosecute his researches. Suppose the subject of his investigations should be the monumental stones of the earliest Christian epoch, which are found along the eastern coast of Scotland, in which the symbols and inscriptions are frequently so much effaced by the action of the elements on the soft porous stone of that part of the country; a photographic picture, however sharp and clear, could not serve the student's end, because the elevations and depressions are so small, that the picture would not contain all the elements necessary to guide the mind to a correct idea of the forms and symbols portrayed. Besides, the figures are reversed, a circumstance which might lead the student (if no photographer) astray. In the stereoscope, the object stands out before the observer in all its actuality; he sees it as distinctly as if the real stone were before him. Every elevation and depression, however slight, is given with perfect truth, and he can trace the various forms, and adopt



his conclusions in regard to them, with the most perfect confidence that he can not possibly be deceived by any appearances occasioned by the light falling in a particular direction, which assurance he could not possess by looking at a photographic picture, however excellent. Had the French consul, who found the first Assyrian monument in the mound of Kouyinjik, been possessed of a Binocular camera, and had he taken pictures of the interesting slab, which with immense labor he had dug from the rubbish in which it had lain for ages, that memorial of a mighty people might have been preserved for ever, and its inscriptions might have been read by our future scholars. As it was, he could only make a rude drawing of little practical value, and then witness with regret its rapid dissolution. The slab, consisting of lime which had been subjected to the action of fire, absorbed moisture from the atmosphere, and quickly crumbled to pieces. Layard, in his most interesting researches, could also have preserved many beautiful specimens of Assyrian art, which, being multiplied and scattered over Europe, would have been more effectually preserved than though the originals could have been sent to our National Museum. Some of those which have, alas! perished for ever, might, like the Rosetta-stone, have given some scholar the key to the whole. The multitudinous hieroglyphics of Egypt, the inscriptions in the living rock in the Wadies of Arabia, and the strange cuneiform characters of Babylon and Nineveh, with all the treasures of their art, might be preserved from the injuries of time, and from the ravages of barbarous men, and could be simultaneously studied by the learned throughout the world.

By the stereoscope we have preserved to us (and probably for ever) one great fact, which, having existed, has passed away—the Crystal Palace of 1851. It is preserved to us by the stereoscope in a much more perfect form than by the beautiful drawings which were made at the time by our artists; for, as a whole, or in its different parts, it is seen to stand out before us almost as vividly and truthfully as when, with all the world, we hastened to contemplate it; so that by the wonderful power which, if we may so speak, lies concealed in these stereoscopic slides, our descendants in the next, and in succeeding centuries, will receive al-

most the same impression as we did, when gazing on its wonders. In 1851, the stereoscope was a new instrument, its wonderful properties were not fully understood or appreciated, and the slides which were then produced were not such as could be made now. The still greater Crystal Palace which has arisen from the ruins of the former has been taken by skillful artists; and their pictures, when seen in the stereoscope, cause those who witness them to hold up their hands in wonder and amazement, and to give utterance to expressions of surprise and delight. After it, too, like all earthly things, has passed away, it will exist in these pictures for the gratification and instruction of future ages.

To the physical sciences, the stereoscope has already made many valuable contributions. By it the architect can superintend the progress of an edifice, seated in his office, and give directions to his workmen, though hundreds of miles from them. The geologist can obtain the most perfect idea of the position of the strata, and other circumstances, in which any interesting relic of a former world has been found. The botanist can obtain the most correct conceptions of some rare or curious plant found in some distant country. And the geographer,

“Without the danger and fatigues of travel, can scan the beauties and wonders of the globe, not in the fantastic or deceitful images of a hurried pencil, but in the very picture which would have been formed on his own retina were he magically transported to the scene. The gigantic outline of the Himalaya and the Andes will stand self-depicted before him; the Niagara will pour out before him in panoramic grandeur her mighty cataract of waters; while the flaming volcano will toss into the air before him her clouds of dust and her blazing fragments.”

In the domestic circle, how much pleasure is this beautiful and wonderful instrument calculated to afford! The father, whose thoughts often turn to his darling boy, the pillar of his house and the inheritor of his name, and who, prompted by the calls of duty and of patriotism, has gone forth as the defender of his country's liberty, can see the loved object of his affections as when he stood before him in the fullness of his youthful beauty and strength. The mother can gaze upon the image of her lovely daughter, as she was wont to stand before her in all the charms of opening womanhood,

ere disease, like "a worm i' the bud," had preyed on the dimpled cheek, and death entered her dwelling, and robbed her of her earthly treasure. The dutiful son can gaze with a feeling of holy awe upon the father, sitting before him as when alive, in the mellow beauty of ripening age; and as he gazes upon the well-remembered features, and recollections come thronging upon his mind, he will lay down the instrument, feeling, perhaps, that the lessons of piety, instilled by the beloved lips, have been more deeply impressed upon his heart. By its instrumentality, a father or brother in India can know the changes which time is making on the circle at home, and as he looks on the loved ones, he can feel the ties, which time and distance were relaxing become stronger.

In the social circle, how delightful, how rational, the amusement which the stereoscope can afford! How different from the shifts which are often resorted to for killing time! The grandest productions of nature and art can be exhibited by the intelligent host to his wondering guests, imparting, at the same time, valuable instruction, and elevated and exquisite pleasure. He can show them

"The hallowed remains which faith has consecrated in the land of Palestine, the scene of our Saviour's youth, and pilgrimage, and miracles—the endeared spots where He drew

His first and His latest breath. The hills and valleys of the Holy City—the giant flanks of Horeb, and the awe-inspiring peaks of Mount Sinai, he can display to the Christian's eye in the deep lines of truth, and they will appeal to his heart with all the powerful associations of an immortal interest. With feelings more subdued will the antiquary and the architect study the fragments of Egyptian, Assyrian, Grecian, and Roman grandeur—the pyramids, the temples, the aqueducts, and the obelisks of former ages. Every stone, every inscription, will exhibit to them its outline and its story. The gray moss will lift its hoary frond, and the fading hieroglyphics will utter their faltering voice, and tell their mysterious tale. The fields of ancient and of modern warfare will unfold themselves to the soldier's eye in faithful perspective and unerring outline; while, in his fancy, reanimated squadrons will again form on the plains of Marathon, and occupy the gorge of Thermopylæ."

The instrument we have thus briefly described, and the applications of which are just beginning to be understood, has added not a little to the already world-wide fame of Sir David Brewster. We trust that it is not the last he will give to the world, but that his mind, which still retains all the vigor and buoyancy of his early youth, will discover many others, which will conduce, like all the labors of his active life, to increase the civilization and happiness of his fellow-men.

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From the Leisure Hour.

## DR. LIVINGSTON AND HIS AFRICAN DISCOVERIES.

WHILE the gentlemen of England sit at ease in their homes, repose on downy beds, or move about in luxurious style upon the rail—passing rapidly over streams, marshes, and moors, without inconvenience—compassing hill and valley with no perceptible change of level, there are fellow-countrymen, gentlemen by birth and education, who have none of these accom-

modations for stationary life and transit. No home is known for months together, sometimes for years; and no facilities for locomotion are enjoyed beyond their own feet, with now and then a canoe, an oft-jaded steed, or a bullock-wagon, though immense distances are accomplished, over plains of untracked sand, or through wilds savage in appearance, difficult in reality,

and dangerous from their brute or human inhabitants. Allusion is of course made to those who are out on exploring tours in various countries beyond the bounds of cultivated society—some actuated by the love of enterprise, others by that of science, and others inspired with the noble ambition of becoming the pioneers of civilization and religion to barbarian races. One of the most adventurous, meritorious, and successful of the latter class is named at the head of this article, the scene of whose journeyings—Africa—has so long excited the curiosity of Europeans, invited attempts at exploration, and still remains with a vast extent of its area which can only be represented by a vacant space upon our maps. We have hitherto intentionally refrained from reference to his remarkable enterprise, the importance of which it is scarcely possible to over-estimate, deeming a sober and comprehensive examination of it preferable to a hurried notice.

The great continent beyond the waters of the Atlantic, the very existence of which was not known to the civilized world four centuries ago, has been traversed from the icy borders of the Polar Ocean to the volcanic cones of the Land of Fire; and from the range of the buffalo on the grassy prairies of the Missouri, to the realm of the condor on the snow-clad head of Chimborazo. But Africa—so comparatively contiguous—so grand in history, with a name which has been stamped for ages upon its page—the cradle of the Jewish legislator, and the asylum of the infant Saviour—the scene of Greek and Roman prowess under an Alexander, a Scipio, and a Cæsar—the prime emporium of oriental commerce after the fall of Tyre, and the great repository of literature under the Ptolemies—is still in its interior regions beyond the bounds of geographical knowledge, a land of mystery to the white man, with millions of square miles of territory which his foot has never pressed, nor his eye seen.

It is curious to connect this ignorance of the near and approachable, with our knowledge of the distant and inaccessible. Though separated from the lunar world by a vast extent of celestial space which mortals can never pass, reliable information has been obtained respecting the contour and scenery of the far-away orb. We are certain that it is not a steppe-like region, but diversified with mountains, crags,

plains, gullies, and abysses—that stupendous heights rise with the abruptness of vertical walls, and stretch away in immense curvilinear chains upon its surface. We are even approximately acquainted with the diameter of the circular inclosures, the altitude of the bounding ramparts, can follow the tapering elongation of their shadows, and mark the sunlight resting upon the towering peaks, while the valleys at their base are immersed in the gloom of sunset. But though thus familiar with definite features in the remote and unapproachable domains of nature, we are profoundly ignorant of the physiognomy of an intertropical portion of our Home-Earth—whether it spreads out as a sandy desert and stony plain, abandoned to the ostrich and the simoon, or has grand elevations mingling with the clouds, skirted with lovely valleys, flowing waters, and luxuriant forests. The case is the more remarkable, as our own ships have sailed along the shores of the mysterious region for three hundred years, while a portion of the northern coast-line is daily overlooked by a British garrison on the rock of Gibfaltar, and strips of land in the west and south have long formed a part of our colonial empire.

Attempts have not been wanting to solve the problem of Central Africa; and the solution approaches. They revive painful reminiscences—the memory of gallant-hearted men who have lost their lives in the task of exploration, which, in such a region, requires the courage of a lion and the endurance of a camel. The names of John Ledyard, Frederick Horneman, Dr. Walter Oudney, Captain Clapperton, Major Denham, John Richardson, and Dr. Overweg, occur in the list of those who have fallen victims either to the climate or the hardships of their pilgrimage. But a more melancholy enumeration may be made. Major Houghton perished, or was murdered, in the basin of the Gambia. The truly admirable Mungo Park was killed in an attack of the natives, at a difficult passage of the Niger. The same fate befel Richard Lander in the lower course of the river. Major Laing was foully slain in his tent, at a halting-place in the Sahara. John Davidson was assassinated soon after passing the fringe of the desert. Dr. Cowan and Captain Donovan disappeared in the wilds of Southern Africa, no doubt by violence, while attempting to penetrate to the Portuguese settlements

on the east coast, successfully reached by Dr. Livingston.\* As this is the region which will be henceforth under notice, some preliminary observations may be indulged, referring to its geographical, natural, and religious history.

The grand altar-like mountain, generally capped with clouds, which overlooks Cape Town and Table Bay, near the southern extremity of Africa, was discovered by the Portuguese under Bartholomew Diaz, in the year 1486. Owing to the terrible storms encountered in its neighborhood, he denominated the cape, *Tormentoso*, a name which his sovereign changed to that of *Cabo de Boa Esperanza*, Cape of Good Hope, as of better augury. Ten years later, Vasco-da-Gama passed round the southernly projection of the continent, and opened the maritime highway to the shores of India. In the reign of James I., two commanders of the English East-India Company formally took possession of the country, but no attempt was then made to found a settlement. In 1650, it was colonized by the Dutch, and remained in their hands nearly a century and a half, during which time the boers or farmers spread themselves in the interior. In 1795, the dependency was captured by a British armament. After being restored to the Dutch in 1802, it was retaken by the British in 1806, and permanently annexed to the empire.

The tropic of Capricorn may be regarded as the line of division between Central and Southern Africa. At this point the continent extends east and west about 1300 miles, and stretches nearly 700 miles southward to the Cape. This region includes very varied scenes, but has not been by any means fully explored. There are mountainous ranges, visited at their summits with keen frosts and heavy snow-falls, the gorges of which are river-beds, fringed and largely overgrown with gigantic reeds and creepers; splendid forests of the stately and park-like acacia, in the branches of which the social cross-beaks chiefly rear their interesting and singular nests; monotonous sand-plains, upon which the sun glows hotly, stretching out to an apparently interminable extent, with only a thin sprinkling of grasses,

and no trees, but a few dark-green mimosas struggling along the narrow and often dry water-courses; and levels equally vast, but more stony and wildly sterile,

"A region of drought, where no river glides,  
Nor rippling brook with oaser'd sides;  
Where sedgy pool, nor bubbling fount,  
Nor tree, nor cloud, nor misty mount  
Appears to refresh the aching eye,  
But barren earth, and the burning sky,  
And the blank horizon round and round."

But even where the desolation is most complete, the traveler may be brought to a stand, as was Gordon Cumming, by the exquisite air-plant, with its bright scarlet hues, growing in the crevice of a granite block. "In the heat of the chase," says the modern Nimrod, "I paused, spell-bound, to contemplate with admiration its fascinating beauty."

Thinned as the animal races have been by the white man's rifle, and scared northward by his advance from the south, the large quadrupeds—zebras, gnus, gemsboks, quaggas, steinboks, elands, and giraffes—are found in prodigious numbers, especially toward the tropic, and may be encountered migrating in vast swarms, indiscriminately mingled with troops of ostriches in company, when severe drought compels them to quit their customary haunts in search of pasture.

"Afar in the desert I love to ride,  
With the silent bush-boy alone by my side;  
Away, away, from the dwellings of men,  
By the wild deer's haunt and the buffalo's glen;  
By valleys remote, where the oribi plays,  
Where the gnu, the gazelle, and the hartebeest  
graze,  
And the gemsbok and eland unhunted recline,  
By the skirts of gray forests o'erhung with wild  
vine.

"Afar in the desert I love to ride,  
With the silent bush-boy alone by my side;  
O'er the brown karroo, where the bleating cry  
Of the springbok's fawn sounds plaintively,  
Where the zebra wantonly tosses his mane  
As he scours with his troop o'er the desolate  
plain,  
And the timorous guagbra's whistling neigh  
Is heard by the fountain at fall of day,  
And the fleet-footed ostrich over the waste  
Speeds like a horseman who travels in haste."

The formidable classes also muster in great force on advancing northerly from the long-settled districts—lions, leopards, hyenas, rhinoceroses, elephants, and buffaloes, with hippopotami and crocodiles. Not less prominent among the perils of

\* While these pages are passing through the press, intelligence has been received of the assassination of Dr. Vogel, in the country eastward of Lake Chad.



the wilderness are the deadly puff-adders and cobras. Nor must troops of enormous baboons be forgotten, grinning and grunting, ready and able, in a few minutes, to hug and scratch the life out of the unlucky intruder into their domain, who is mad enough single-handed to offer them exasperation. Still, the risk in traveling is not so great as might be imagined, where proper caution is exercised by an exploring party efficiently equipped. But it is difficult to secure constant vigilance in the case of numbers; and hence the fatal casualties have not been few, while the hair-breadth escapes are many, in the records of African adventure. The great hazard and misery connected with journeying arise from causes which are not apparently formidable—exposure to the heats by day and the chills by night, with precarious supplies of absolute necessities; and myriads of insects, some of which, as the bush-tick, take up their quarters beneath the skin, and produce intolerable irritation till they are dislodged.

Remarkably does animal life vary as to the scale on which it is exhibited—from the tiny black mouse, scarcely weighing a quarter of an ounce, to the old bull-elephant of two tons. Enormously, to Europeans, it appears developed in the donder paade, or monster toad, about a foot in length, and nearly three-quarters of a foot in breadth—the fine gentleman of the marshes. This toady, quite a buck, flaunts the gayest colors, showing himself with a spotted green back, set off by a yellow belly, and further variegated with a pair of large red eyes, which the Caffres say spit fire, perhaps “in a fine frenzy rolling.” But however glaring the outward adornment, the voice is not soft and wooing, but a most discordant croak. Report also states that a poisonous fluid is ejected, and tales are told of its deadly effects. Yet, as this has not been certainly verified, that we are aware of, the benefit of the doubt may be awarded to the smart aldermanic batrachian. But by far the most extraordinary object, owing to its mysterious power—the tsetse-fly—is encountered on approaching the tropic, though its range is chiefly beyond it. This insect, small and insignificant in appearance, not so large as our meat-fly, though with longer wings, is armed with a poison equal to that of the most deadly reptile, and is one of the greatest scourges to which the traveler is exposed. On man, indeed,

its bite has no effect, more than that of a flea; but the domesticated animals, horses, cattle and dogs, it surely kills. The strangest circumstance is, that all the wild quadrupeds, however analogous to its victims, as the zebras, buffaloes, and jackalls, either bear its bite with perfect impunity, or are not attacked at all, as they feed undisturbed in the localities of the insect. The problem is at present perfectly inexplicable, what quality exists in domestication which renders domestic animals obnoxious to the poison? and why should man escape its evil influences, being the most domestic of all creatures?

Travelers have lost all their draught-oxen and horses by the tsetse, and have thus not only had their journey marred, but their personal safety endangered from the want of means of conveyance. Gordon Cumming was in this way completely stranded in the wilderness, and was indebted for his rescue to the timely arrival of assistance from Dr. Livingston, who heard of his predicament. The bold hunter referred to thus described the effects of the fly-bite: “One of my steeds,” says he, “died of the tsetse. The head and body of the poor animal swelled up in a most distressing manner; his eyes were so swollen that he could not see; and in darkness he neighed for his comrades who stood feeding beside him.” In some instances, death takes place soon after the bite is inflicted; but more generally, it produces emaciation, blindness, and the animal perishes of exhaustion. The destructive pest is never or rarely found in the open country, but frequents hills, where there are bushes or reeds. It is fortunately confined to particular spots, and is never known to quit its haunts; so that cattle may graze securely on one side of a river, while the opposite bank swarms with the insect. The natives know the localities, and carefully avoid exposing their stock to them. The case of the tsetse-fly reminds us of the poisonous bug of Miana, in Persia. This diminutive plague is not known apart from the town and its immediate neighborhood, and only causes ordinary annoyance to the natives. But its bite is mortal to strangers, sometimes producing speedy death, though more commonly a fatal wasting of the frame results. The Russian embassy of 1817, having occasion to pass Miana, pitched their tents three miles from it, on account of the terrible bugs.

More than four-score years elapsed, after the colonization of South Africa commenced, before any attempt was made to evangelize the natives. At last, in 1736, a Moravian missionary, good George Schmidt, wended his way to the Cape, and established himself at no great distance from it, in the interior. This was in Bavian's Kloof, the "Glen of Baboons," a name which was superseded by that of Genadendal, the "Vale of Grace," which is still retained. Here he addressed the Gospel to the Hottentots through the medium of an interpreter, founded a school for the instruction of their children, built himself a house, planted an orchard, and labored for seven years, till circumstances compelled him to return to Europe. Half a century passed away before the mission was resumed, when three brethren of the same communion visited the spot. They found the house in ruins; yet the fruit-trees were flourishing, and a female convert survived, in age and feebleness, who through fifty long years had preserved the New Testament presented to her by Schmidt. One of his pear-trees remains to this day in the Vale of Grace. Dr. Vanderkemp and his coadjutors followed in 1799, and carried the truth into Caffreland and the Bushmen country. This reference to the beginnings of the Gospel must suffice. We have no space to sketch the extended missionary operations of our own countrymen, carried on with a resolution and faith which reminds one of apostolic times, and blessed with signal success. The reader must pass on with us to Kuruman, the missionary metropolis of a race of Bechuanas, situated about one hundred and fifty miles beyond the northern frontier of the Cape colony, founded by Messrs. Hamilton and Moffat of the London Society, in the year 1823.

A copious fountain is a thing of joy in a dry and thirsty land, where a cloud may not be seen for months, and twelve months pass away without a shower. Such a region is the one occupied by the Bechuanas. The early missionaries had to trudge for miles to obtain water for their daily use, and send their heavy linen a hundred miles to be washed. But such a fountain gushes near the Kuruman station, pure and wholesome, issuing from cavities in a rugged limestone rock. It forms one of the sources of a stream which, after a course of some ten miles, is lost by evaporation and absorption in its bed, but formerly flowed

into the Orange river. Near the fountain lies interred Mr. Kok, one of the first Dutch missionaries in the country, who, disheartened by the character of the people, took to sheep-farming, and was murdered by two aggrieved natives in his service, while looking after his flocks. Slowly the premises of the station arose, its founders working with their own hands, as carpenters, masons, thatchers, and smiths, in the midst of many troubles. They consist of a chapel, built of limestone, thatched with reeds and straw, completed in 1839; comfortable cottage residences; a school-house, smithery, and other offices, with walled and well-stocked gardens. A broad grass-walk divides the premises on the one hand from the gardens on the other; and round the latter runs a range of lofty trees, resembling the Babylonian willow. A pleasant-looking place is Kuruman. For upwards of twenty years it has been a center of light in a land of darkness, while often kindly mentioned by way-worn scientific and gentlemen travelers, Mr. Methuen, Dr. Andrew Smith, and others, for the Christian hospitality of its inmates. At this spot Mrs. Livingston, daughter of Mr. Moffat, was nurtured; and here arrived in, 1841, Dr. Livingston, who has opened from this starting-point a new world to the knowledge of his countrymen.

David Livingston was born in the year 1813, at Blantyre, a village in the neighborhood of Glasgow, where his father, Neil Livingston, now deceased, and his mother, Agnes Hunter, who still survives, long resided previous to their marriage. In youth, he exhibited the marks of a resolute and vigorous character; and the parents were frequently congratulated upon the promising conduct of their son. A portion of his time was spent in a cotton-factory, and the remainder in attending classes, both literary and medical, at the University of Glasgow. Much was he interested in the latter study, and such encouragement was given him to prosecute it, as under ordinary circumstances would have led to his establishment as a practitioner in his native country. But the purpose had been previously formed to devote himself to the cause of missions; and in the year 1837 he offered his services to the London Missionary Society. This offer being accepted, he continued his studies, both ministerial and medical, under its auspices; obtained his medical diploma;

was ordained as an evangelist to South Africa; and sailed early in 1841 for his destined sphere of labor, in the ship "George." In the April of that year, the missionary landed at Port Elizabeth, on the west coast of Algoa Bay, with a brave heart and high objects in view, though little appreciating at that time the perils and fatigue to be encountered in penetrating the unknown lands of a region "whose soil is fire, and wind a flame." Dangers from exposure to intense heat, from length of way, from hostile and treacherous natives, from wild animals and venomous snakes, from starvation, from the dire torment of thirst, from miasmatic swamps, and from disease, in various forms, have been confronted by this remarkable man, with a fearlessness which provokes admiration, and with a success in which the blessing of Providence upon his mission is signally apparent. From the coast, Dr. Livingston proceeded to Kuruman.

After spending three months at Kuruman, devoted to preliminary inquiries, Dr. Livingston entered actively upon his mission, and commenced that career of perilous enterprise in which his fate has been furrowed with hardships, and blackened by exposure to the fierce sun of tropical latitudes. From the first, he contemplated gazing upon earth and sky which no European had ever seen, and preaching the Gospel to races to whom it had not previously been conveyed. To qualify himself for this task, he sought an accurate acquaintance with the language of the natives—the soft, mellifluous, Italian-like tongue of the Bechuanas—spoken by the numerous sections of the nation, scattered over a vast range of country, extending from the borders of the Orange river far into intertropical Africa. With this object in view, he separated from civilized society to dwell among them; boldly pushed his way northward to the Bamangwato dwelling under the tropic; founded a station with another tribe, at Mabotsa, on returning to the south, to which he brought a missionary from Kuruman in 1843; and, having married a daughter of Mr. Moffat, he took up his own residence, in 1845, with Sichele, the chief of the Bakwains.

These tribes, and many others known by different names, are essentially the same people—Bechuanas—formed into separate communities, independent of each other, dwelling in towns and villages,

under the government of hereditary rulers. Though descended from the same stock as the Caffres, they have an inferior physical development, and are by no means so courageous. While largely despotic, the chiefs submit important affairs to the decision of an aristocracy, composed of elders and braves, who are summoned to a kind of open-air parliament, and who not unfrequently overrule the will of their superior. This is especially the case if he shows any tendency to grow fat, as this symptom is esteemed an infallible indication that cares of state little oppress him; and, not content with seeing that he has a "lean and hungry look," they will sometimes handle him to gain perfect satisfaction. It is curious to find, in other parts of the continent, that obesity is revered as the right royal condition; and the chief is regarded as a model potentate, "every inch a king," in proportion as he waddles like a duck, or grunts like a pig, from overpowering corpulence. Only the Bechuanas of the south have yet come within the sphere of improving European influences. Those who are beyond it, like their brethren formerly in similar circumstances, are the wildest savages, inveterate thieves, the dupes of rain-makers, but occasionally their butchers, when the wizards have raised high expectations of showers which the heavens refuse to fulfill. So far from being given to idolatry, not the least trace of it is found among them, for no notion is entertained of any superior being; and no distinction is known between man and brute, except that man may be the greater rogue of the two. They stretch northward, with their dingy brown complexion, beautified with grease and red ochre, to ebony-colored races, black and bright as jet, the true negroes, with whom they intermingle. With tribes of these two great families of our species, Dr. Livingston was chiefly in contact in his travels; and to the latter, we shall have further occasion to refer.

Having completely won the confidence of Sichele, at the head of the Bakwains, he became the steadfast friend of his teacher, a very useful ally, and a truly enlightened man. Occupying an unfavorable locality, owing to the scarcity of water, the chief was induced to remove his people, in 1847, to Kolenbeng, which then became the most advanced mission-post in the central part of South Africa,

and was the starting-point of Dr. Livingston on his first great excursions. It deserves remark, that, prior to the commencement of these apostolic expeditions, he had made seven journeys, each of which, going and returning, was at least six hundred miles, and had thus passed over more than four thousand miles of barbaric ground without being known to the world as a traveler at all. Two circumstances mainly led him to determine upon the attempt to open country to the northward of his station. On the one hand, he felt it a duty to extend evangelic effort to the benighted inhabitants of the interior; on the other, he wished to secure a retreat for the chief and tribe with whom he resided, in the event of an attack upon them on the Trans-Vaal Dutch boers. These men—a sturdy, brutal, and rapacious class, altogether independent of the British government—constitute a free republic. They compel the natives within reach to do their bidding, assemble in formidable bodies from their homesteads to wreak their vengeance upon the refractory, and are inveterately hostile to the passage of English missionaries to the north, lest English traders should follow in their track, and take the traffic in ivory out of their hands.

#### FIRST AND SECOND JOURNEYS.

Early in the present century, the rumor of a great lake in the interior of Southern Africa reached the ears of Europeans; but as no information respecting it of a trustworthy nature could be obtained, its existence remained doubtful. The rumor grew stronger with the northerly progress of discovery. Still, travelers and hunters in vain expended their energies and resources in attempts to ascertain the truth or falsity of the report; and in Mr. Moffat's map, of 1842, the lake figures as an undetermined natural feature of the country. The failures were caused by the Kalahari desert—the Sahara of the South—which it was found impossible to cross, owing to the want of water; but the happy thought occurred to Dr. Livingston, that, by skirting the terrible wilderness on the eastern side, instead of attempting the direct passage, he might solve the geographical problem by a circuitous route, and remove the veil from a fertile and populous region, if an extensive fresh-water expanse really exist-

ed. Accordingly, accompanied by Messrs. Murray and Oswell, gentlemen travelers, with wagons, bullocks, and a retinue of native attendants, he started on the expedition. Mr. Oswell, in the service of the East-India Company, at present in London, had a narrow escape from leaving his bones to bleach on the plains of Africa; for more than once he was within an inch of being impaled by the murderous horn of the white rhinoceros, hard as iron, and sharp as a razor. On one occasion, when mounted on a favorite hunter, the rhinoceros charged him, while the horse, as if paralyzed with terror, refused to obey the bridle. Lowering his head, and then thrusting it upward, the huge beast struck his horn through the body of the animal, with such a force that the rider felt its point jerk him on the saddle, and both steed and rider performed a complete somersault in the air. The horse was of course killed, but, fortunately for Mr. Oswell, the rhinoceros walked off without taking advantage of his prostrate condition.

The party left Kolobeng on the first of June, 1849. "I do not wish," wrote the explorer, "to convey hopes of speedily effecting any great work through my own instrumentality; but I hope to be permitted to labor, as long as I live, beyond the line of other men's things, and plant the seed of the Gospel where others have not planted, though every excursion for that purpose will involve separation from my family for periods of four or five months." This was a noble aspiration, and nobly has its sincerity been illustrated, the separation from home, wife, children, and countrymen having been undergone for years, instead of months. For three hundred miles the route lay through a dreary and sterile region, where the principal vegetation consisted of "wait-a-bit" thorns, and no water could be obtained for successive days, causing intense distress to the travelers and their cattle. After proceeding in a northerly direction for upwards of a month, they emerged from this arid waste, and found themselves, on the 4th of July, on the banks of a fine and stately river—the Zouga—flowing to the eastward. A broad belt of reeds and rushes fringed the stream, with timber and fruit trees, among which the enormous baobab, from sixty to seventy feet round the stem, reared its head above the highest giant of the forest, while



beautiful parasitical plants and creepers hung in festoons among the branches. Here and there limestone rocks formed the margin, rendering the scenery charming, and reviving in the mind of the Scotchman the remembrance of his native Clyde. Learning from inhabitants on its borders that the river issued from a distant lake, the adventurers ascended its course, and, after a passage of about three hundred miles, following the windings, early in August they joyfully beheld the oft-reported and long-mysterious expanse, brilliantly reflecting from its surface the bright sky of Africa.

The lake is known locally by a variety of names, as *Inghabé*, the "giraffe," *Noka ca Mokorion*, "lake of boats," and *Ngami*, "the waters," the last of which has been adopted by geographers. Though not so large as at first represented, it is a fine sheet of water, perhaps seventy miles in circuit, considerably contracted in the middle, so as to resemble, according to some early native descriptions, the shape of a pair of spectacles. Its feeders are chiefly at the north-western extremity, while the Zouga is the outlet, which, after a long course, is lost in an immense marsh, or sand-flat, a perfect sea of reeds, haunted by vast herds of buffaloes. Both the lake and its rivers are subject to vast changes of level, the cause of which is quite obscure, as it appears to be independent of the seasons. The natives speak of the waters retiring daily to "feed," of course coming back after their meal; and our explorers observed a rise of several feet in the river, which could not be the effect of the rains, as it was the dry season, and the stream was beautifully clear. Numbers of hippopotami, crocodiles, and aquatic birds were seen in connection with the waters; and the country literally swarmed with large wild animals. Not less than nine hundred elephants were killed in the course of three years, after hunters and traders from the south entered it, some of whom made large profits by the sale of ivory at the Cape. Since the introduction of fire-arms, these quadrupeds have rapidly decreased, and what remains are shy and wary.

The aborigines of the lake-region, the Bayeiye, seem to be "the Friends" of the African body politic. They never fight, but submit themselves quietly to the domination of every conquering power, and are now subject to a tribe of Bechuanas,

to whom they stand in much the same relation as the Anglo-Saxons to their Norman lords. According to their own account, their forefathers once tried their hands at fighting, but their bows broke in the using, and since that time the practice has been abandoned. The discovery of this new field for the missionary, the geographer, the naturalist, and the trader, excited no little interest in the civilized world; and, appropriately, the Royal Geographical Society of London awarded to Dr. Livingston one half of the royal premium for the year, in the shape of a chronometer watch. Fain would he have gone farther north, especially on learning that he was only about ten days' journey from Sebitoané chief of the Makololo, of whom he had previously heard as anxious to be brought in direct communication with the white men. But as the means of advancing at that time were wanting, the party retraced their steps to Kolobeng.

In April of the following year, 1850, the lake-region was revisited, with the view of penetrating to the indicated country beyond it. Mrs. Livingston accompanied her husband on this journey, with their young children, and Sichele, the Bakwain chief. But the prevalence of marsh-fever and the destructive fly compelled them to return without accomplishing their prime object.

### THIRD JOURNEY.

Having carefully prepared for another effort, Dr. Livingston, again accompanied by his family, and also by Mr. Oswell, who had been in the interval to the Cape, started from Kolobeng in the early part of 1851. After crossing the Zouga, a northerly course led them to some great superficial depressions or "salt-pans," coated with saline incrustations, and containing springs of brackish water. Bending round to the north-west, a well-wooded limestone region was traversed, then a dismal swamp, and finally, having struck on the large river Chobe, its channel conducted the travelers to Linyanti, the capital of Makololo, and residence of Sabitaoné. The chief was manifestly delighted at the visit. Being a Bechuana from the south, little difficulty was experienced in communicating with him. By the fire, before dawn, he recounted the reverses and adventures of a somewhat lengthened career.

For nearly thirty years he had been at war, chiefly with the Matabele, the people of the renowned and terrible Moselekatse. This man, visited by Mr. Moffat in 1830, rose from being an obscure marauder to become the Napoleon of the Desert, and was familiarly known to his subjects as the Elephant and the Lion's Paw, in allusion to his prowess and ferocity. "He dipped his sword in blood, and wrote his name on lands and cities desolate." After crushing many powerful tribes, he conquered Sebitoané, who became a fugitive, and fled, with a remnant of his tribe, from the skirts of the Kalahari desert, to the fastnesses of the northern rivers. Though inferior in point of numbers to the aborigines of the country, the refugees gained for themselves both political and moral ascendancy over the natives; and thus the Makalolo consisted of a mixed race of dusky expatriated Bechuanas, lords of the territory, with jet-black negroes the bulk of the population.

Perhaps an eye to his own safety from his old foes the Matabele, who pressed on his southern border, had led Sebitoané to be anxious for intercourse with Europeans. However this may be, he only lived to see the desire of his heart accomplished, and no more. The chief attended two religious services conducted by his guest the day after his arrival—the first and last at which he was destined to be present, for immediately afterward he was seized with pneumonia, and in a fortnight expired. This event, and apparently calamitous, proved no real disadvantage, for his son and successor, Sekeletu, was similarly disposed to his father; and the people, though the wildest savages, were kind in the extreme to strangers, according to their views of kindness.

The country which had now been entered, presented a totally different aspect to any that had yet been traversed. It was a vast level, rich and fertile, intersected with numberless streams, and hence called, in the language of the natives, "rivers upon rivers." The Chobe was found to flow into a main channel to the eastward—a grand trunk river—which, as afterward traced, finds its way under various names, the Leambye, Secheke, and Zambesi, to the Mozambique Channel and the Indian Ocean. On first visiting its banks at the end of a remarkably dry season, it presented a very large volume of water, about a quarter of mile in

breadth; and though the banks were from fifteen to twenty feet high, evidence appeared of an annual overflow to the distance of fifteen miles from them. "When the wind blows," says Dr. Livingston, "waves of considerable size rise on its surface, and accidents frequently occur in crossing. It was quite calm when I went over in the morning; but as the time for taking an altitude of the sun approached, the waves were running so high that it was only by great persuasion I could induce the people to paddle me back again." But though a fine region, with a large population of blacks, it was evidently unsuitable for the permanent residence of Europeans, owing to the periodical inundations and consequently malarious climate. Impressed with this conviction, yet bent upon bringing the newly-discovered races within the pale of Christian effort, the intrepid missionary returned with his companions to Kolobeng, and determined upon sending his wife and children to England, in order to devote himself to a more extensive scheme of exploration for the benefit of the tribes in the far interior.

With a left arm that wanted "mending," having been broken in a struggle with a lion which he had shot, and with an affection of the throat that required skillful treatment, Dr. Livingston accompanied his family to Cape Town, took leave of them, and returned northward. He designed first to make a bold plunge into the heart of Central Africa, then turn westward to the Portuguese settlements on the coast, and open a new route from the ocean to the interior, which might possibly prove shorter and easier than the one from the Cape. His journey southward was arranged by a merciful Providence. While prosecuting it, the Dutch boers attacked Kolobeng, killed sixty of the Bakwains, destroyed the mission premises, and expressed their disappointment at not capturing the missionary, but vowed to have his life. Meeting with Sichele, the injured chief, on approaching Kuruman, and asking him where he was going, he replied, "I am going to Queen Victoria." He endeavored to dissuade him from the project, stating that he would have no one to interpret for him. "Well," said he, "if I do go to the Queen, will she not listen to me?" Having of course replied in the affirmative: "Then," said he, "I'll go." He proceeded to the Cape with the view

of reaching England, but failed to obtain a passage.

#### FOURTH JOURNEY.

Attended on this occasion only by natives, Dr. Livingston started from Kurnaman, taking with him in a bullock-wagon a pontoon-boat brought from the Cape. Before the close of the year 1852, he had regained his former position, but reached it through almost insuperable difficulties. The whole face of external nature was changed. On his last visit, the waters were at their lowest level. Now the streams were at the highest point, and country was deluged. In addition to this difficulty, sudden illness disabled the whole party, with the exception of the leader and one lad. He was obliged, therefore, to proceed in advance with this lad, in order to obtain help to bring along the invalids and the wagon. Embarking in the pontoon on the inundation, they passed over miles of flooded lands, in search of the Chobe, and at last discovered it tumbling along, after having climbed a high tree to look out. But to reach the stream required no ordinary toil and endurance. A broad *chevaux-de-frise* presented itself, of Nature's workmanship, consisting of tall papyrus reeds, and flags, growing out of the water, the whole inlaid with a convoluted kind of creeper. Having broke through this barrier with great labor, dragging the pontoon after them, a "horrid sort of grass" was encountered, six feet high, with serrated edges, which cut the hands cruelly, and made havoc with strong moleskin garments. Three days and nights were spent, constantly wet up to the middle, in getting through this miserable jungle. After launching on the river, it soon carried them down to a village of the Makololo, to whom it seemed as if the white man had fallen from the clouds, so unapproachable did they consider themselves from the state of the streams; and yet he had come as if "riding on a hippopotamus," alluding to the pontoon. The necessary force was speedily dispatched to bring along the party left behind.

A welcome reception awaited Dr. Livingston at Linyanti, on his second visit, both from the chief Sekeletu and his subjects. Their imaginations were excited by the thought of possessing the wonderful things of the Europeans, some of which they

saw, in the shape of clothing, arms, and wagons, while of others they heard exaggerated accounts from the Kuruman people. Though eager to pass on, the chief was as anxious to detain his visitor, so that it was not till the close of July, 1853, that any advance was made. Starting from Sekhose, on the Zambesi, an experimental trip was made up the river, in the long narrow canoes of the natives, which they rowed rapidly against a strong current. Thirty-three canoes, manned by a hundred and sixty men, formed the expedition. They found the stream often more than a mile broad, adorned with numerous islands, which, as well as the banks, were covered with forests of banyan-like trees, above which towered the date-palm, and the feathery foliage of the lofty Palmyra palm. Amid scenery of this description, the river, known in this part of its course under the name of the Leambye, was ascended to Nariel, the chief town of the Barotse. These people—a race of industrious blacks—occupy the country for about a hundred miles from north to south, lying between two ranges of hills, and raise large crops of agricultural produce in the intervening valley. As a protection from the inundations, artificial mounds are raised above high-water mark, upon which they place their villages and pasture their cattle. Upon the retirement of the waters, the uncultivated ground is covered with rank grasses, an inch round and twelve feet high, while, with the scantiest husbandry, quantities of grain are raised on the cleared soil.

Often as the profusion of animal life had been remarked by the traveler, he was perfectly astonished at the herds of large game in this region; and, never having heard the sound of a rifle, they were perfectly indifferent to the presence of man. Cowper's lines were remembered, and felt to present a life-like picture:

"The beasts that roam over the plain,  
My form with indifference see;  
They are so unacquainted with man,  
Their tameness is shocking to me."

One evening eighty buffaloes, the most dangerous of all African quadrupeds, when under irritation, slowly defiled before the camp fire, and the lion's roar was heard in close proximity. At such times, when those occupations which divert the mind were over for the day, the wanderer

must have felt powerfully the isolation of his position, cut off completely from the communion of the civilized world, all kindred spirits hundreds of miles away, alone in the midst of savages. Though his companions were most eager to serve him, yet, as barbarians, they could not understand a civilized and Christian man, and inadvertently tried his patience to the utmost by the savagery of their revels and usages. But a conviction of being in the path of duty, which never wavered for a moment, brought freshly to remembrance in the time of need the consoling thought, "Yet I am not alone; for the Father is with me."

From this preliminary examination of the river and the country to the northward, Dr. Livingston returned to Linyanti, and having sent back the party from Kuruman to that station, he set out again toward the north, on the 10th of November, accompanied by twenty-seven native attendants. Proceeding as on the recent trip, progress was rapid and easy, so long as river-navigation was available; but it became as slow and toilsome when gliding over the waters had to be exchanged for trudging on foot, or a ride on the back of a bullock. Three hundred miles were made in this uncomfortable manner, while heavy showers fell, as it proved to be the rainy season, and the drenched wayfarers had to wade through flooded plains, subsisting almost entirely upon the manioc root, the chief component of which is starch. Fever and dysentery impaired the strength and wasted the frame of the explorer, yet he manfully struggled with untoward incidents, and found his followers perfectly patient under them, ready to endure every thing with him to the last extremity. Upon reaching the latitude of 12°, he shifted his course from north to north-west, in order to strike the city of Loando on the coast, the capital of the Portuguese province of Angola, about eight hundred miles distant.

Soon after entering upon this new direction, the sorest troubles and greatest dangers of the pilgrimage were experienced. On approaching the bounds of civilization, the extremes of barbarism were encountered; for the native tribes, depraved by the slave-trade, received the advancing party as a spoil and a prey. They offered no food, except at an enormous price; they allowed no passage

through their villages without exacting a heavy fine; they availed themselves of the meanest pretexts to extort a present, and swords and spears were brandished to enforce submission to their rapacity. But for a firm, yet calm bearing, and the care of Providence, the traveler would have lost his life. As it was, he had to part with every thing, and was in extreme distress, when happily a far-inland Portuguese colonist was met with, by whose assistance he reached Cassange. From this point all his wants were liberally supplied by the colonial authorities, and the party entered Loando in May, 1854, where Mr. Gabriel, her Majesty's arbitrator—the only Englishman in the place—hospitably accommodated Dr. Livingston. "I shall never forget," says he, "the delicious pleasure of lying down on his bed, after sleeping six months on the ground." The astonishment of his twenty-seven faithful attendants on beholding the city, the sea, the cruisers in the harbor, and the novel objects of civilized life may readily be imagined. They were duly reported on returning to their countrymen in the interior, and have since formed the topic of many a tale to wondering groups on the banks of their native rivers. "Our fathers," said they, "told us that the world had no end. But they were wrong; for, as we traveled on, all at once we came to the world's end, and the world said to us, 'I'm done—there's no more of me—there's nothing but sea.'"

St. Paul de Loanda, the capital of the Portuguese colony of Angola, a maritime town of some eight thousand inhabitants, was founded in the year 1578. The province extends a considerable distance inland; Cassange, one of the principal settlements, being about three hundred miles from the coast. But some of the colonists have a much more interior location, far indeed beyond the bounds of the Portuguese government, residing at solitary posts, called *feiras*, or fairs, occasionally visited as trading stations by the native tribes. Yet it was not until the adventurous journey of Dr. Livingston, that any direct path was opened between the center of the continent and the seaboard; and his experience of danger and difficulty on the way rendered it sufficiently manifest that his track is not at present an available route. So enfeebled was he by disease, and so exhausted by hardship,



as to be unable, toward the close of the journey, to sit upon his ox for more than a few minutes at a time; and a long confinement from serious illness awaited him at Loanda, which, at one period, seemed likely either to prove fatal, or to incapacitate him for further onerous labors. Happily, by the blessing of God upon rest, the care of friends, and restoration to the comforts and amenities of civilized life, his vigorous constitution rallied; and once more, the task of finding a convenient highway into Central Africa, in a new direction, absorbed his thoughts, and he addressed himself to it with dauntless courage and indefatigable industry.

While the traveler was invalidated, his companions from the interior were busily employed in making acquaintance with the wonders of civilization, and obtaining some of its novelties to carry back to their native wilds. Soon after entering the Portuguese province, they had been told by the negroes of every village in their way, that the "white man was taking them to the sea, and would sell them all on board a ship, to be fattened and eaten." Though not really mistrustful of their leader, who had shown himself so much their friend, it was scarcely possible for this suggestion, often repeated, to fail in exciting uneasy feelings. Hence, with no little terror they gazed for the first time on the broad expanse of the ocean, and saw the floating castles on its bosom—so huge and strange to men whose experience of navigation had been confined to paddling in rude canoes over inland streams. On being persuaded to go on board one of the British cruisers, their fears were speedily dissipated by the kindness with which they were received by officers and men; and upon becoming convinced that they were the countrymen of Dr. Livingston, their admiration of the latter knew no bounds. While his high motives were far beyond the range of their comprehension, yet these simple children of nature could now fully appreciate his magnanimous disinterestedness in having visited such an inferior race—brought them forth from the land of their fathers to behold on sea and shore the marvels with which he was perfectly familiar—sharing their lot on the long pilgrimage, and enduring without a murmur its privations. Their respect and gratitude were expressed in an almost idolatrous manner; and he was obliged

promptly to check its manifestations. In order to procure articles to carry to their countrymen, they hired themselves for wages to unload a collier at the port, worked at coal-heaving for a month, and were beyond measure astonished at the prodigious quantity of "stones that burn" in the hold of the vessel.

With the liveliest satisfaction, the news of the traveler's emergence from the *terra incognita* of Africa was received in England; for it would have occasioned no surprise had intelligence arrived of some fatal casualty having befallen him, or had he been added to the number of those who have disappeared mysteriously in countries drear and strange, surely perishing, but under circumstances as to time, place, and manner, which have never been fully ascertained. His friends, in anticipation of the journey, had trembled for his safety, specially on the ground of his going alone. He well knew their fears; and as no letters awaited him at Loanda, it seemed as if they had acted upon the presumption that he would never reach the place. Postal misadventures, occasioning brief intervals of anxiety and vexation, are among the everyday incidents of life; but after a separation of two years from home and kindred, the phrase, "no letters," involves a tax upon feeling which we can not pretend to gauge. This was not the only mishap which befel the correspondence of the far-away wanderer. His own dispatches and maps from Loanda were lost in the wreck of the "Forerunner" off the island of Madeira; and Mr. Moffat had the mortification of overtaking letters, papers, and parcels, while on a journey to the north-east from Kuruman, which, according to prearrangement with his son-in-law, he had been sending after him into the interior for more than eighteen months. They had been detained by a chief who was under promise to forward them on the way to Linyanti, and who stated, after grinning and laughing at remonstrance, that he meant to keep all he could get, till Livingston himself came with a handsome reward to redeem the articles.

The heart of the continent had now been traversed from the south extremity to within 9° of the equator, passing through about 25° of latitude. In honor of this arduous service, the University of Glasgow conferred upon the explorer

the degree of L.L.D.; and in its botanical garden, plants are now flourishing raised from roots and seeds sent home by him, one specimen of which is said to belong to an entirely new genus. The Royal Geographical Society also awarded to him the Queen's Gold Medal—the highest distinction in its power to confer—which Dr. Tidman received as his representative from the hand of the President, the late Earl of Ellesmere. The latter, in presenting it, appropriately remarked: "Within these two days, a volume in the Portuguese language has been placed in my hands, the record of a Portuguese expedition to African exploration from the east coast. I advert to it to point out the contrast between the two. Colonel Monteiro was the leader of a small army—some twenty Portuguese soldiers, and one hundred and twenty Caffres. I find in the volume no reason to believe that this armed and disciplined force was abused to any purpose of outrage or oppression; but still the contrast is as striking between such military array and the solitary grandeur of the missionary's progress, as it is between the actual achievements of the two—between the rough knowledge obtained by the Portuguese of some three hundred leagues of new country, and the scientific precision with which the unarmed and unassisted Englishman has left his mark on so many important stations, of regions hitherto a blank, over which our associate, Mr. Arrowsmith, has sighed in vain."

Though naturally anxious to see his native land and rejoin his family, Dr. Livingston felt bound to decline the favorable opportunity of doing so from the Portuguese port, subordinating private feeling to the demands of public duty. He had to conduct back to their far-off homes the twenty-seven confiding natives who had attended his footsteps; and the prime object of his expedition—that of discovering a practicable route for Christianity and commerce between the interior and the coast, with a salubrious district for a mission-station—had not been effected. He resolved, therefore, to retrace his course to Linyanti, and follow from thence the channel of the Zambesi to Quilimane, one of the Portuguese ports on the opposite or eastern side of Africa. "I return," wrote he, "because I feel that the work to which I set myself is only half accomplished. The way out to the east-

ern coast may be less difficult than I have found that to the west. If I succeed, we shall at least have a choice. I intend, God helping me, to go down the Zambesi or Leambye to Quilimane." This was sketching for himself a journey of more than two thousand miles, completely across the continent, from the Atlantic to the Indian Ocean. Upon his intention being made known, the Count de Levrado, Portuguese ambassador in London, undertook the charge of letters from his friends, with a view to their safe transmission to Quilimane; and her Majesty's government dispatched orders to the commanders of cruisers on the east coast of Africa to keep a sharp look-out for the heroic missionary.

#### FIFTH JOURNEY.

Toward the close of the year 1844, Dr. Livingston girded himself for his great undertaking, and bade farewell to the waters of the Atlantic. He was aided in every possible way by the authorities of Angola, the merchants of the capital, and the inhabitants of the colony; and returned the favor, while journeying through the province, by correcting its maps in various particulars, fixing the latitude and longitude of important places, while casting an observant eye upon the pursuits and condition of the people, chiefly blacks and half-breeds. Our readers will remember the poet's reference to the "groves of Angola," and to the dismal deeds there connected with the luxuriance of tropical nature:

"From the thicket the man-hunter sprung,  
My cries echoed loud through the air;  
There was fury and wrath on his tongue;  
He was deaf to the voice of despair."

The abominable slave-trade is still carried on in Angola. But the traveler, since returning to this country, has borne refreshing testimony to the fact that, in comparison with former times, the traffic is so diminished, as to be commonly spoken of in the past, instead of the present tense. Owing to the activity of our cruisers, stationed along the coast to prevent exportation to the transatlantic markets, the foreign slave-trade has been rendered too dangerous and unprofitable for merchants to pursue it, many of whom have turned from slave-dealing to coffee-growing. It is pleasant to learn, upon

the same authority, that the English name has penetrated a long way into the African interior, and that we are known there as the "tribe that likes the black man."

The fifth and last journey, now to be noticed—the most extraordinary trip—may be said to have commenced fairly about the beginning of February, 1855, when Dr. Livingston left Cassange; and including stoppages at Nariel, Linyanti, and Tete, it extended over a period of sixteen months, terminating at Quilimane on the 26th of May, 1856. The former part of it, lying over old ground, may be summarily dispatched.

Upon encountering the tribes beyond the Portuguese frontier, demoralized by contact with them, but independent of their control, the same inhospitable treatment was experienced as on the previous occasion; and it must have been a sore trial to the temper to deal with them, making the most extortionate demands as to the price of food, or for the means of crossing a stream, or for the simple permission to pass on, and get out of their abominable neighborhood. Sorrowfully also must the European have seen his native attendants stripped of the fruit of their hard-won earnings at Loanda to satisfy the rapacity of the miscreants. Yet they made the sacrifice without a murmur; and subsequently, in all reports respecting the expedition, public and private, uniformly expressed themselves in the kindest terms toward their leader. All inhospitality ceased upon entering the country of the unsophisticated African. The party now found themselves at home, were received with enthusiasm in the villages through which they passed, and wanted for nothing the people had to give. From Nariel, in August, a brief letter to Mr. Gabriel, at Loanda, forwarded by a native trader, informed him: "My men are all in high spirits, and quite prepared for another trip, although, as we have had to sell almost every thing for food, they have but little to show after their long absence from home." Having constructed canoes, they embarked upon the Leambye; and with a powerful current in their favor, were rapidly carried down toward Linyanti, where they arrived at the close of the following month. Sekeletu, the chief, received them with every demonstration of delight; and the Makololo welcomed their traveled countrymen as the wise men of the nation. They had visited

the land of the *Wasunga*, or wise men, the term applied throughout Southern Africa in one form or another to the whites; and the tale of their adventures has since, doubtless, formed the staple of many a "long yarn" on the banks of their rivers.

Refreshed by a few weeks' halt, and duly prepared for the prosecution of his journey, Dr. Livingston started for the East-African coast toward the close of October, attended by upward of a hundred natives, picked out of a large batch of volunteers, who were anxious to place themselves under his guidance. He proposed to follow generally the course of the Zambesi, proceeding along the northern bank; and we have to attend him to an island in the river, in the most southerly part of its channel, where one of the most welcome incidents awaited him that could possibly befall the traveler. The spot in question is a few miles above the Mosiotunya Falls. A notice of the event involves a digression respecting the movements of a relative, Mr. Moffat.

Anxious to have supplies forwarded to his son-in-law, Mr. Moffat hoped to accomplish this object through the agency of Moselakatse, the chief of the Matabele, who has been previously named lord of the territory extending to the south bank of the Zambesi. Accordingly, he left Kuruman with the supplies, and reached the town of the chief, situated some four hundred miles to the north-east, starting about the time that Dr. Livingston had arrived at Loanda. Nearly a quarter of century had elapsed since his former visit to the powerful barbarian. He found him changed in appearance—an old and diseased man—but still unchanged in character, as martial and despotic as ever, the terror of his subjects, ruling them with a rod of iron, and revered by them as the "lion of lions," the "king of kings," the "man-eater," and "god of cattle and men." Among other titles ignorantly applied to him by his parasites, that of *schelm slecht* is recorded—words caught from the Dutch boers, answering in their meaning to "great rascal," which the Dutchmen liberally bestow upon his imperial highness. Strange to say, the tyrant, surrounded with his armed myrmidons, was pliant as a child to the wishes of Mr. Moffat. Twenty men under an officer were sent off to the Zambesi, carrying seventeen packages for Dr. Livingston.

Upon reaching the south bank of the river, this Matabele escort communicated with the Makololo on the opposite bank, in order to surrender their charge into their hands. But apprehending treachery from their deadly enemies, the latter declined to cross; and the Matabele retired, leaving the packages by the side of the stream. They were then removed by the Makololo to the island in the river; and more than twelve months afterward, there they were found by the traveler, to his unspeakable comfort and delight. Not a package had been opened; and having been screened from the weather, not an article was damaged. This is, perhaps, no proof of honesty on the part of the custodians, who might be restrained by some fear of witchcraft from meddling with the property.

At this point the party left the river, to avoid a rocky country and hills infested by the tsetse. But before diverging, Dr. Livingston visited the Mosiotunya Falls, and saw the most striking spectacle he had ever beheld—a cataract of a perfectly unique kind. The Zambesi, about a thousand yards broad, is here suddenly compressed between the walls of a basaltic cleft, and precipitates itself upward of a hundred feet into a trough or basin little more than twenty yards wide. It raves for some distance through a narrow channel, and gradually recovers expansion on escaping from its rocky prison. Though seen under unfavorable circumstances, as the stream was at its lowest level, the sight was sublime, and satisfied the observer of its extraordinary grandeur after the periodical rains. The spray and roar of the cataract, seen and heard for miles, originated the designation Mosiotunya—"smoke-resounding" Falls.

Soon after rejoining the river, the explorer was rewarded for all his toils and sufferings. This was by the discovery of a highland region, free from tangled woods and reedy pestilential marshes, with a fertile soil carpeted with short grass, stretching away to the eastward from the confluence of the Kafue with the Zambesi. Filled with thankfulness, and elate with hope at having found a salubrious locality adapted to the site of a mission-station, he pursued his way, meeting with uniform kindness from the natives, and experiencing no difficulty in supplying his party with food. Though daily rations for a hundred and fourteen

men, hungry travelers too, involved no trifling consumption of provender, there was game everywhere at hand in abundance. Zebras supplied roast beef; giraffes, fillets of veal; antelopes, haunches of venison; and if African pork or bacon was wanted, there was plenty to be obtained from the portly hippopotamus. Countless multitudes of the beautiful spring-bok were seen scouring the plains. "I could form no idea of the number of these lovely animals I saw in actual migration. I can compare them to locusts alone; for as far as the eye could reach, they appeared a tremulous mass, sometimes in sprinklings, and at other times in dense crowds, upon a plain six or seven miles long by three or four broad." As for elephants, they were so thick upon the ground, in some parts of the country, that the travelers had often to shout to them to get out of the way.

The first traces of Europeans were encountered at Zumbo, an island at the junction of the Loangua with the Zambesi; but they were the ruins merely of a town long deserted. This was the farthest point from the coast ever reached by the Portuguese in light canoes. On approaching their present settlements, great difficulties were experienced. The natives had to be avoided, being ferocious marauders; all the oxen were killed by the tsetse; no canoes could be procured; and over a country covered with shingle and shrubs, Dr. Livingston had to trudge on foot, while the heat was excessive. When within eight miles of Tete, where he was sure of a hospitable reception, he was so completely overcome as to be unable to move a step farther. Fortunately, while lying on the ground, the governor, Major Sicard, hearing of his proximity, sent out to him the "materials of a civilized breakfast;" and thus refreshed, he entered the town on the morning of March the 2d, 1856.

Though once more within the sphere of civilized life, he was still three hundred miles away from the coast; and as it was the season of the year when the intervening delta of the Zambesi is specially unhealthy, he awaited its termination at Tete, kindly entertained by the governor. In this town Dr. Livingston finally left the band of faithful natives who had accompanied him from the interior, under promise, if spared in life, to return to them in the course of the present year—



a pledge which he is now on the eve of fulfilling. He felt no difficulty in leaving them to their own resources; for besides being capital hunters, they were industrious men, with friendly Portuguese at hand to help them in case of need. Having reached the port of Quilimane on the 26th of May, after an interval, H.M.S. "Frolic" hove in sight, which conveyed him to the Mauritius, on his way to England. A most melancholy incident marked his arrival at the British colony. Deeming it desirable that one of his native attendants should see England, and report of it to his countrymen in Central Africa, as an eye-witness of its wonders, he had selected at Tete the most apparently eli-

gible for the purpose, who descended with him to Quilimane. The sight of the sea, then tossed by a tempest, and of the ship of war, filled the poor Makololo with amazement; and on embarking in a boat to gain the vessel, he turned to Dr. Livingston, with a look of intense excitement, and said, "Is *this* the way you go?" There can be little doubt that the surprise and alarm occasioned by a first contact with such novelties shook to derangement the mind of the untutored native. He made, however, the passage of the Mauritius; but on entering the harbor of St. Louis, he no sooner saw a steamer in motion than he rushed overboard and perished.

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From Tait's Magazine.

## CATHERINE MERCIER.

### A TALE OF THE INUNDATIONS IN FRANCE.

LYONS, the second city in France, and the seat of the celebrated manufacture of silks, is built principally upon a tongue of land formed by the confluence of the Saone with the Rhone, a situation of great advantage commercially, as it affords the facility of water communication both with the Mediterranean and the Atlantic; but, from the low level upon which most of the city stands, and from the rapid, and often swollen currents of the rivers, it has frequently been the scene of most terrible inundations. Embankments have been formed at various points to guard the city from its watery foes; but though useful in restraining any ordinary rise, they are totally inadequate to protect the lower parts of the place from the powerful floods which occasionally overwhelm the unprepared inhabitants, causing such loss

of life and property as can scarcely be imagined by people at a distance. Lyons has, however, even a more terrible element than even the angry waters running through her streets. In 1794, when Collet d'Herbois and his terrorist associates held their tribunal in the Hotel de Ville, the executions were so numerous that human blood was poured forth like water, and with its crimson current flooded the Place des Terreaux. So horrible was the sight, that the agents of the Convention, fearing lest the inhabitants should rise, gave up the guillotine as too much exposed, and too tardy for their vengeance; they transported their prisoners across the Rhone, and in the open fields on the left bank of that river, with no hearts near them that felt one touch of pity, were the helpless victims slowly mowed down by

discharges of grape and canister, and scenes were enacted, which gave to Lyons a preëminence of suffering, even amongst the many ill-fated cities of France.

But the open fields which witnessed these guilty deeds are open fields no more. Though the city at the time of the Revolution was confined to the narrow tongue of land between the two rivers, and the opposite bank of the Saone, comprising the suburbs of St. Croix and Fourvieres, it has, since the commencement of the present century, extended to the left bank of the Rhone, and the populous and stately districts of Les Brotteaux and La Guillotin are connected with the parent city by several handsome bridges. The faubourg of Les Brotteaux is built upon the very ground on which the revolutionary massacres took place, the memory of which it preserves in a monumental chapel, erected at the end of a street called the "Avenue des Martyrs." Stately buildings are arising on all sides, but, as in the city itself, the more retired streets are narrow and dirty, with tall houses on either hand, making perpetual twilight, containing family above family in their eight, nine, or ten flats, until an almost incredible population dwells upon a very small superficial space of ground.

The sun was setting one evening during the last week in May, 1856. Heavy rains had poured down hopelessly the whole day, and the sky was dark and lowering, except in the west, where the glorious orb had broken through the clouds, after many struggles, to throw his welcome light upon the city for a few minutes. His rays were but feeble, for the same relentless rain which had just ceased had prevailed for many days, and the very atmosphere seemed saturated. New-born rivulets ran down the narrow streets, finding their way to the great swollen, yellow Rhone, which coursed along with accelerated speed to its ocean home. But, as butterflies come forth to the summer sun, so did the gay inhabitants of Lyons pour forth to enjoy for a short time the fresh air unmixed with rain, and the streets were crowded. Amongst the many foot-passengers who were crossing the Point Morand, was a young soldier, walking briskly in the direction of Les Brotteaux. His regimentals were faded and worn, having evidently seen hard service. His face was sunburnt, but a pleasant one withal, to look at, and the smiling mouth,

just overshadowed by a juvenile moustache, and the sparkling, intelligent eyes, seemed to say that he—Victor Chapereau—was in high good humor with himself and all the world. And certainly, if any one had reason to be happy and thankful, it was he; for he had just returned in honor and safety from the Crimea, and was on his way to Les Brotteaux to see Catherine Mercier, who, four years before, when he left Lyons, had almost promised to be his bride.

Victor Chapereau was the son of a soldier who was killed in the riots of the silk weavers at Lyons, in 1834. His mother, previous to her marriage, had been femme-de-chambre in a nobleman's family in the country, and when she was left a widow, with an infant in arms, her former mistress showed her great kindness, established her as a "lingère" in the suburb of Fourvieres, introducing her to the notice of several influential families in the neighborhood. Jeannie's industry and skill procured her plenty of customers, and she was thus enabled not only to support her child honestly, but also to give him the advantage of a good education. When Victor reached the age of fifteen, nothing would satisfy him but that he must be a soldier, as his father had been before him; and after many a struggle, and much secret grief, his mother gave her consent. To lose her cheerful companion, her bright and beloved boy, was a hard trial to the poor woman, but she bore it with true resignation, and instead of folding her hands in despair, only worked the more diligently that she might lay by a store for her only child. For three years she saw him frequently, as his regiment was stationed at Lyons, or in some neighboring place; but after that time it was sent to Marseilles; and when, in two years, the war broke out with Russia, she received a hasty line from Victor, to say that he was to embark that day for the Crimea, without the opportunity of bidding her farewell. It was indeed with an anxious and loving heart that the poor mother joined her prayers to the many strong supplications which rose from all parts of the land for the safety of loved ones who were fighting in the far-off East. Occasionally she heard from her son, who wrote whenever he had time; but some-

\* Lingère. One who makes and gets up all kinds of fine linen.

times the letters were lost, and sometimes they were written on the eve of an assault, and then came the sickening suspense as to the result. But at last all France rang with the glad tidings that Sebastopol was taken—taken, however, with such a loss of life, that many a widow and orphan were the fruits of all the glory; and Jeannie knew that Victor's regiment had been one of the first to rush up the death-hill of the Malakoff, and she dreaded the post, lest, instead of the bold writing of her son, it should bring her a cold official letter, to tell her that her only child had followed his father to a soldier's grave.

But a happier fate was in store for her; she received a letter from Victor full of wondering thankfulness that he had been spared, when his companions on both sides were moved down in their desperate rush upon the Malakoff; and the mother read with pride that he had been one of the first to enter the fort, which had procured for him the special notice of his commanding officer. Some months after, when the welcome peace was proclaimed, Jeannie set herself to work, to prepare the house for his return; and, early in the afternoon on which our story commences, as she was kneeling down on the floor, arranging some linen which she had just ironed, in a basket, she felt two hands laid upon her shoulders, and starting up, found herself in the arms of her soldier son. Four years absence had altered him much; the slight boy was become a firm and active man, and the Eastern climate had browned his fair skin; but there was the same bright, honest expression, and the same loving heart, and the mother rejoiced indeed to find him unchanged in all but personal appearance.

"Home looks very comfortable after the trenches," said Victor, as he glanced round the neat room, with its bright stone, white walls, and well-cared-for furniture; "that old press, and the little table look to me like particular friends, and here is actually my own favorite chair ready for me. But what a superb new cushion it has! why, mother, I saw nothing prettier than this in the Turkish bazaar at Constantinople."

"It was made by Catherine Mercier's nimble fingers," answered she, "in preparation for your return."

This piece of information was evidently very gratifying to the young man, for he

regarded the cushion more carefully and tenderly, and as he bent over the embroidered flowers, said, in a low voice: "How is Catherine, mother?"

"Blooming as a rose, and brisk as a marmotte. Every Sunday she comes across in time to accompany me to mass, and then she spends the rest of the day here. In winter, Pierre comes to fetch his daughter home, but in summer we go to the Promenade, and afterward I sup with them."

"And do you think she remembers me?" asked Victor.

"Pray do you think," said his mother, smiling, "that the prettiest girl in Lyons, who might have been married well twenty times, would come and spend all her Sundays and fête-days with a stupid old woman, if that old woman had not a certain absent soldier son?"

Victor laughed as he seized his bright little mother in his arms, and kissed her again and again. "Ah! but you know," said he, "that she was a sad flirt four years ago, and I have always heard that such a disease increases with age."

"Well, you must remember that Catherine lost her mother when she was an infant, and has been her father's spoiled child; besides, she has many admirers, and it is but natural that a young girl's head should be somewhat turned by all the flattery she has received. Why, I have even been told that her father's employer, the rich M. Lubin, would give his right hand, to say nothing of half his fortune, to marry her."

"And what does Catherine say to such a magnificent proposal?" asked Victor, with a clouded brow.

"It is said that she does not care a pin for him; but he will persist in being at the house every day, and is her very shadow, and there is no knowing what perseverance might not have done if her favored lover had not returned to claim her; but with all her little follies, Catherine is true at heart; she is an excellent daughter, and will be a good wife."

"And how does Pierre get on—is he still a journeyman weaver?"

"Oh, no; he is become a chef d'atelier, lives au troisieme in the same house where he formerly lived au neuvieme, has the whole flat to himself and his looms, employs several men under him, and is reputed to be the most skillful weaver in Lyons."

"Mother, I see the rain has ceased; I think, if you will give me something to eat, I will just go across to the Merciers to-night. I shall soon return, but I don't think I shall sleep till I have seen Catherine. What weather it is," added he, going to the window, and looking upon the drenched world without, "it looks as if it had been raining for a month."

"We have had ten days' incessant rain, and the lower parts of the city are flooded; it is to be hoped that we shall have fine weather soon, or I am afraid the rivers will be rising much higher."

Bustling about, she soon prepared a meal for her son, and when it was dispatched, she sent him forth with many injunctions to return in good time. "For," said she, "I shall be afraid it's a dream that you are at home again, until I see you back."

Crossing the Saone, Victor passed through the crowded streets of Lyons, and leaving the Place des Terreaux, he reached the Point Morand. When he arrived at the middle of the bridge, he bent over the parapet for a moment. "Strange!" said he to himself, "I well remember a curious stone carved like a dog's head, which projected from that pier many feet above the water, and now I can not see it; the rise must be high indeed."

Upon reaching the other side, he passed through the more stately streets, to the quarter of La Petite Californie, which is situated to the East of Les Brotteaux, and turning into a narrow street, he stopped at the general entrance of the third house on the left-hand side. Like most of the houses in Lyons, it was constructed of wooden framing filled in with bricks, and consisted of nine flats, which rose in dizzy height, though some of the neighboring tenements were even higher. So densely populated was the street, that, though erected within the last forty years, the houses had a stained look, as if they had borne the wear and tear of many generations. Ascending the general staircase, the young soldier stopped at a door *au troisième*, and tapping lightly, he lifted the latch, and entered a spacious room.

Large logs of wood were blazing merrily upon the hearth-stone, for the continued wet weather rendered a fire an indispensable comfort, notwithstanding the late season. The apartment was likewise lighted by lamps, and at a table in

one corner sat two men, with papers and patterns spread out before them, the one writing from the other's dictation. The elder of the two was dressed in the ordinary garb of a superior Lyonesse weaver, but his companion evidently belonged to a very different class. His coat was made of the finest material, cut in the extremity of the fashion, he wore a richly-embroidered waistcoat, and his valuable rings, numerous gold chains, and diamond breast-pin testified to the wealth of the wearer, if not to his taste; and Victor at once decided that he was in the presence of his rival, M. Lubin. But the glance was momentary, for in the center of the room, arranging a table for supper, was Catherine Mercier.

If Victor had carried away with him a pleasant impression of her—if, during the last few months, he had been picturing to himself what he should find her after four years' absence, and had painted his imaginary portrait in lover's colors, he was not destined to be disappointed in her appearance. Rather under the middle height, her figure, though slight, was beautifully rounded, and shown off to the best advantage by her perfectly-fitting dress. Her features were regular and good, her dark-brown eyes were shaded by lashes of a darker hue, but it was in the expression of her countenance that Catherine Mercier's chief attraction lay. There was not one emotion, from the deep tenderness of a true woman to the veriest mischief of an arch coquette, that did not occasionally assert its right to play over her features, changing them as the shadows of the ever-varying clouds alter a sunny landscape. When Victor entered, she turned her head toward him, and her first recognition was all that he could desire; her face lighted up, and she sprang forward to meet him with a delighted exclamation; but suddenly, partly from shyness, partly because she felt that M. Lubin's attention had been attracted, and that great man was watching her with his fishy eyes, and partly, perhaps, from a feminine, but not very amiable desire to tease her lover, she drew back and, giving him her hand, said, coldly:

"So, Maitre Victor, you are come home at last."

"Victor!" exclaimed her father, who had been too much engrossed with his writing to hear the door open, "Victor Chapereau, welcome, my brave fellow! I am very glad to see you safe back again;



we have not been a little anxious about you, I can tell you," said he, advancing, and embracing the young soldier heartily. "He is the son of an old friend of ours, M. Lubin," added he, turning to that gentleman, "and we have known him ever since he was a boy."

M. Lubin bowed very coldly, a young soldier in faded regimentals was not interesting to him; besides, he saw, with true instinct, that Victor was a rival, and therefore he felt hostile to him at once.

"Come, we will all sit down to supper now," said Pierre. "M. Lubin, allow me to have the honor of assisting you—an excellent omelette I can assure you; Catherine's fingers are as successful in the production of made dishes as in embroidery."

"Any thing made by Mademoiselle Catherine must be, like herself, charming," said he, with a complimentary bow.

Catherine replied with some lively badinage, and she and M. Lubin kept up an animated conversation during supper, to which, it must be confessed, the other two did not contribute. Victor was seated near Pierre, and numberless were the questions the kind-hearted old man asked him respecting all that he had seen in the East, to which he replied rather absently, for his eyes were following Catherine's every movement, and marking with jealous ire the officious attentions of the rich merchant, which seemed to him favorably received. "Ah!" thought he, "M. Lubin may be as stout and as selfish as needs be, but women are so bewitched by riches, fine clothes, and flattery, that a poor soldier like me has no chance." At last M. Lubin, excited by affability to which he was not accustomed, gave vent to his dislike to Victor in sarcastic speeches directed at him, and which were the harder to bear, as they often called forth Catherine's merry laugh. Victor was fagged and depressed, and rose to go.

"Do not go yet, my good fellow," said Pierre; "I have not heard about the Malakoff."

"I promised my mother that I would be at home in good time. I only arrived in Lyons this afternoon, and she begged that I would not stay long."

"But it is so early," said Catherine, whose conscience was stinging her, as she looked at his sad face, "do stay."

"I am very sorry, but I can not; I

promised to leave at nine, and I must keep my word."

"Oh! certainly," said Catherine, hastily, "pray do not put yourself out of the way to do me a little favor;" and with an offended air she turned away, and began taking the things from the table.

Victor bit his lip. M. Lubin smiled spitefully; and Pierre, who was blind to all that was going on, bade him good night, after affectionately entreating him to come again soon. The young man bowed haughtily to M. Lubin, then went close to Catherine and held out his hand, looking gravely and sadly in her face. Now, if Catherine had given way to the impulse of the moment, she would have thrown her arms round his neck, confessed herself a little goose, said that she admired and loved him, and that never had M. Lubin been so hateful to her as this evening, and thus sent him away happy; but strong as the inclination was, it was combated by a spice of coquettish pride; so she merely shook hands coldly, and said, "I suppose you will honor us with your company again soon?"

"Not unless our meeting is likely to be a happier one than this has been," said he, hastily, and at once left the room.

We all know how bitter it is when we return after a long absence, full of anticipation of our first meeting with those we love, to find ourselves awakened from our pleasant dreams by some cold and disappointing reality. Often our hearts are too full to utter the many tender speeches we have, as it were, been conning over, and often those we meet, perhaps from the same cause, do not at first welcome us so warmly as our yearning love has expected, and thus these meetings are generally sad ones. So poor Victor felt, as he left La Petite Californie, and struck toward home. If he had not heard the reports about M. Lubin, it is probable he would not have heeded Catherine's coldness; but the slight suspicion which his conversation with his mother aroused had rankled in his mind, and thus he had been too watchful, too ripe to take offense, which had rendered his manner cold and constrained. But he was too much hurt to examine how far he was himself to blame; for, as Coleridge says:

"To be wroth with one we love,  
Doth work like madness in the brain;"

so he dashed on, regardless of every thing but his own bitter thoughts. Had he been less engrossed, he would have observed much around him to raise alarm. Already had the Rhone risen several feet since he had crossed it earlier in the evening, and, when he reentered Lyons, the streets were unusually thronged with people, some transporting furniture and goods from the lower parts of the town, which were flooded, others collecting in shivering groups under arches or any projecting eaves which afforded shelter against the pitiless rain, which was again pouring down. In some streets near the Saone, Victor splashed in water up to his knees, but even this failed to arouse his attention. Ascending the steep hill, he reached home drenched to the skin, and his mother at once perceived that he had been wounded instead of pleased by his visit. But avoiding any painful questions, she only tried by every loving attention to soothe and comfort him. She persuaded him to go to bed, and made him some hot coffee; and when he had drank it, she left him to the sleep he so greatly required. He had been so anxious to reach home that he had not slept for three nights, and was completely exhausted. Even his restless misery could not keep him awake; for, after tossing about for a short time, tired nature asserted her claim, and sealed his senses in a blessed forgetfulness.

He was awakened ere it was light the next morning by his mother, who was obliged to shake him by the shoulder to rouse him from his heavy sleep.

"Why, mother," said he, rubbing his eyes, "what on earth do you want me to get up for? it is not light yet. I thought I was to sleep till noon."

"My son, the floods are out, the Rhone has risen fearfully, and is still rising; they say La Petite Californie is under water to the second story. Pierre Mercier, who came across last night with M. Lubin, to be ready for some orders in the morning, was attempting to return home, when a piece of timber fell upon him and broke his leg. They carried him to his sister's house near here, and he has sent this note to you."

Victor jumped up, and was putting on his clothes; he took the crumbled piece of paper, and read the following note:

"My brave friend—La Petite Californie

is flooded; I am disabled. Save my daughter, if it is not even now too late.

"PIERRE MERCIER."

It took but a few minutes to equip the ready soldier; his mother made him take some food to eat as he went along.

"You will need all your strength," said she, "and you must eat for my sake."

He knelt down for an instant as he used to do when a little boy—

"Bless me, my mother, ere I go forth."

She laid her hand upon his head, and with a choked voice said:

"God preserve you, my own beloved son."

He rose, took her in his arms, gave her one long, long, loving embrace—feeling it might be his last—and then he sped away upon his perilous enterprise.

Descending the hill of Fourvières, Victor saw in the faint light a terrible panorama of destruction before him. Both rivers were rushing madly along, studded with spoils of their expanded and resistless waters. The Rhone, especially, he observed, was dotted over with the objects which were being carried away; and fearing lest, indeed, he was too late, he dashed recklessly on. In his passage through the city, he had nearer and stronger evidence of the extent of the inundations. Though he chose the higher parts, as less likely to impede his headlong career, he had ever and anon glimpses of streets in which the water was rushing like a river, where whole houses were crumbling down; where the roofs were crowded with refugees from the rising floods; where boats were passing to and fro, and hastily constructed rafts, laden with women and children just rescued, some even in their night-clothes, were slowly moving to some place of shelter. In his path were groups who had been landed—children wailing and calling in heart-rending accents for their parents; mothers rushing wildly about seeking for their lost children, and refusing to be comforted. Others were sitting down in hopeless despair, having seen those they loved best crushed in some quick ruin, or carried away by the raging waters.

Victor sickened at the sight of such misery, and dashed across the nearest bridge. On the other side he seized a small boat, and getting a soldier to help him, they transported it through some streets which were protected by an em-

bankment, and then launched it on the flood. Victor found that the rapid current was in his favor; he stood in the prow, guiding the boat with a pole, and guarding it from the various obstacles which were floating about. A turn or two more would bring them in sight of Catherine's dwelling, but a cross current met him, and he had a serious struggle to prevent its carrying him away; but, by a strong effort he turned the boat round the right corner, and then, O heavens! how fearful was the scene that burst upon his sight!

The water which was bearing him on, was up to the third story, and was rapidly rising; but there was a greater danger attending Catherine than the angry flood. The two first houses on the left-hand side of the street, sapped from their foundations, had fallen in one great crash, whilst the next, being the one in which the Merciers dwelt, was swaying to and fro with every impulse of the fierce tide, and seemed as if, in one instant, it would follow its companions. Victor saw all this, though still at a considerable distance, and also observed that Catherine was at the window just above the water, alone, and clasping her hands as if for aid.

With desperate strokes he sent his boat forward, reckless of the broken boards, pieces of furniture, and animals which were thronging in his course. As he neared the place of danger, he came upon a side street, which rose above the water, and on which were assembled a considerable number of people watching the falling house. There were boats moored near, in which they had brought off the rest of the inhabitants; but Catherine had been aroused too late, and did not come to the window till they had steered off. Just afterward, the other houses fell, and now no one would come to rescue the helpless girl. Amidst the group was M. Lubin on horseback, vainly urging the boatmen to make the attempt.

"Ten thousand francs to any one who will save Catherine Mercier," cried he.

There was not a movement, and the sad looks of the boatmen betokened how desperate the case was.

"Twenty thousand—forty thousand shall it be," cried he.

Still no one stirred—life was dearer to them than money.

"Young man," roared the frantic merchant, as Victor's boat shot past; "half

of my fortune shall you have if you save that girl."

"Beware," cried an old sailor, "it will be certain death."

Victor turned his pale face for one instant, and shouted,

"Money can not save her, M. Lubin; perhaps true love may."

A murmur of applause burst from the crowd.

"Here, my brave fellow," cried the old sailor, throwing a rope into the boat, "tie that fast; we shall pull you back more quickly than you can row, and there is no time to be lost; may God speed you."

Victor seized the rope, and knotted it to a seat; gave one desperate stroke, and his boat, released from some stones which had stopped it, shot under the yawning shadow of the trembling house.

Catherine had given up all hope. Life is very sweet to the young; and it was with an agonized heart that she had watched the boatmen—had seen M. Lubin's fruitless gesticulations, and felt that no human aid was to be procured. All the events of her past life flashed across her mind, and bitter was her penitence for every folly which had looked so little till seen under the shadow of death. She felt that she could meet her fate more calmly if she could have said one word to Victor—but where was he? A sudden and more violent movement of the house, convinced her that the time was short, and shutting her eyes, she knelt down and commended herself to God.

A strong hand laid upon her shoulder called her back to life, and starting up, she saw her lover standing in the boat, keeping it close to the window by leaning his whole weight upon the sill.

"Quick, quick," cried he, "jump into the boat. God grant that it may not be too late."

She sprang lightly down; Victor pushed away from the house; the boatmen, who were watching the scene with breathless attention, tightened the rope, and drew them rapidly back. Scarcely were they at a safe distance, when the whole building fell with a terrible crash, and confused heaps of timbers and bricks, round which the water hissed and foamed, were all the remains of what had so lately been her home. Catherine shuddered and hid her face. Victor, who till this instant had been silent, his compressed lips

and frowning brow alone testifying his deep anxiety, exclaimed,

"Thank God! we are safe!"

They were drawn to the bank, and landed amidst the cheers of the spectators. When M. Lubin saw that Catherine was out of danger, saved by his hated rival, he pulled his hat over his brows, and spurred his horse away from the spot. Victor, having thanked the boatmen warmly for their sympathy and help, took the poor girl upon his arm, and winding his way by the more protected streets of Les Brotteaux, got safe across one of the bridges which yet remained unflooded.

But danger still held her naked sword above their heads. Now they were obliged to fly from falling houses, as they passed in a boat through some of the flooded streets. Then, as they pursued their way on foot, they met a fierce current forcing its way in a new channel. Now they had to tread a terror-stricken crowd, so dense and reckless that it required all Victor's strength to guard his companion from being crushed. Misery and confusion were on every side—mutilated sufferers were being carried on stretchers to the hospitals, and sounds of grief and wild despair rang in their ears. At last, weary, faint, and drenched, Victor led the poor girl to her aunt's house, and without waiting to allow her to speak one word of the love and gratitude which her full heart was struggling to express, he left her. And so the cloud still rested between them.

Pierre welcomed his daughter with deep emotion; he had scarcely hoped to see her again, and received her almost as one given him back from the dead. His leg had been set, and Catherine found him as comfortable as under the circumstances could be expected. Again and again he made her relate the tale of her danger and her rescue, and the warm praises he uttered of Victor's bravery were as music to her ears.

The young soldier had gone at once to his mother's home, to relieve her fears, and get some necessary food, but he would not stay to rest.

"No, mother," said he, "I have saved Catherine, and her life has been granted to our prayers; there are thousands of helpless women and children in danger and distress, and in very gratitude I must go and do my best to succor them."

Three days and nights did he labor

amongst the suffering population of his native city. Where danger was the greatest, and misery the deepest, there was Victor, battling with the floods, helping those who seemed to have none to help them; cheering the fearful, repressing the selfish. And awful were the scenes through which he passed; streets in the most densely populated parts of Lyons were flooded, and in many instances the houses washed down, oftentimes carrying in their ruins their wretched inhabitants. Boats containing the rescued were dashed to pieces by the debris which were being carried about by the raging waters; and those who had just begun to taste the sweetness of hope, were, with heart-rending shrieks, hurled to their death. Cemeteries were flooded, and the graves torn up gave forth their dead, whose bodies, in every stage of decay, floated in ghastly guise upon the face of the waters. Even with the blessed consciousness of doing his best to lessen the suffering, Victor's heart sickened within him.

He had not slept the whole time; he only occasionally ran home to assure his anxious mother of his safety, and take some necessary food. But the fourth evening he walked wearily in:

"Mother, dear, I ought to be proud and happy, but somehow," said he putting his hand to his head, "I do not seem to care for any thing. The Emperor has been down to Lyons; I had just been getting some poor woman out of a tottering house when I was called by a gentleman, and obeying the summons, I found myself in the presence of his Majesty, who was standing in the midst of the floods half-way up to his waist in water, and by his side was my commanding officer, and he spoke a few words to the Emperor; and then his Majesty called me to him, and decorated me with the Cross of the Legion of Honor, for what he called my gallantry in saving the "*inondis*."\* And he farther said, that hearing of my conduct at the Malakoff, he would give me a commission; and so your son, dearest mother, will be Lieutenant Chapereau," said he, smiling; "but somehow I do not seem to care for it as much as I ought to do. My head is so bad," added he, throwing himself on the ground, and laying his head in his mother's lap, "I feel as if I had no strength left."

\* *Inondis*—Sufferers from an inundation.



She put her hand upon his head, it was burning hot; she felt his pulse, it was beating wildly. She saw at once what was the matter—over-fatigue, sorrow of mind, the dreadful scenes he had passed through, and the constant exposure to wet and cold, had been too much for him to bear; and her gallant son—her only child—was stricken with a deadly fever.

When Catherine called an hour afterward, she found the anxious mother listening to the minute directions of a physician, who said that it was a very serious case. Though Jeannie was rather disposed to be angry with her, the sight of Catherine's misery, when she heard of Victor's illness, and found that he was already unconscious, touched her heart; and of her own accord she asked the poor girl to come and help her to nurse him, knowing that it was what she was longing to do. Catherine thankfully agreed to do so, and went home to tell her father of this new call upon her time. He was progressing favorably, was in no danger, and having his sister to wait upon him, he warmly approved of his daughter's going to nurse her brave preserver.

It is very sad to watch by the sick-bed of a man in the prime of youth and strength—to see the body helpless as a little child—the hands vainly endeavoring to grasp anything—the restless head that tosses from side to side—the parched lips. But it is sadder far when the patient is one whom we love best upon earth—when on the issue depends our happiness or our bitterest sorrow. Very silent was that sick room—few were their words, but constant were their prayers. By turns, Jeannie and Catherine sat up at night; and it was a slight consolation to the latter to try by every loving care to deaden the bitter thoughts which were thronging in her mind, and which, when she feared he might die without hearing her confession of folly, and speaking one word of forgiveness, were well-nigh insupportable. Day succeeded day, and still the unconscious invalid tossed to and fro, every hour becoming weaker; yet the fever did not abate.

At last the night of the crisis came, Victor had fallen into a heavy sleep—that sleep which, when ended, might reveal the worst. Catherine had retired from the bed, lest, on first waking, the sight of her might startle him; Jeannie

knelt by her son. As the morning dawned he opened his eyes, and said,

"Mother, where am I?"

Oh! the joy of that voice; it was his own accent, though weak and trembling. She gave him some nourishment, and with a few loving words he fell asleep again. The danger was passed—her son was spared.

Catherine continued in her office of nurse, for he was very much reduced, and required constant care, and though all excitement was strictly forbidden, and he was scarcely allowed to speak, it seemed to do him good to watch her as she moved lightly about the room.

One afternoon when he had recovered a little strength, he was sitting propped up by pillows. The window was open, and the fresh spring air was blowing in, while the warm sunshine illumined the room. Catherine was arranging a bouquet of flowers which she had just brought in, when Victor called her to him, and said,

"Catherine, I fear this sick-room is but a dull place for you. I shall tell my mother to invite M. Lubin to spend the evening here to cheer you."

"Do not be cruel, Victor; M. Lubin is nothing to me. Did he save my life?"

"And the fact of my having had that great happiness is to weigh down the scale even against M. Lubin and all his advantages."

"Certainly, if the scale had not been weighed down long before by something else."

"And what was that something else?" cried he, drawing her toward him, "what wonderful thing could out-balance M. Lubin—his fashion, his fortune, his jewelry—the carriage he would provide you, the rich dresses you would be enabled to buy—what was it?"

She looked into his eager face, her eyes were filled with tears, and with a trembling voice, as she laid her head upon his shoulder, she said—

"Forgive all my folly, Victor, for it was—*Love*."

"My own Catherine," whispered he, "we have been in great danger, and yet we have been spared to each other. The rain has ceased from the earth, and the clouds have passed away. Oh! let no more shadows ever come again between thee and me."

From Titan.

## THE TWO BARONETS.

## A TALE.

## CHAPTER I.

AMONG the many lovely hamlets of "merrie England," commend us to Woodthorpe! Its very name is suggestive of rural beauty and tranquillity, and never was name better merited. It occupies a sequestered nook on the banks of a river in one of the most picturesque districts of Yorkshire. It is accessible from the public road only by a narrow lane, but, in "leafy June," what sylvan loveliness does that narrow lane exhibit! On one side it is overshadowed by huge walnut-trees, the growth of centuries; on the other, it is bounded by a lofty hedge of hawthorn, beneath which spring up innumerable violets, which yield their fragrant greeting to the passing wayfarer. Beneath the umbrageous canopy of the walnut-trees runs a low wall of extreme antiquity, (for it is entirely covered with mosses and lichens,) and over it (for it is scarcely three feet in height) one may look far into the wood beyond, or contemplate a sparkling rivulet, which murmurs away within its lonely recesses, and at length passes the lane beneath a Gothic bridge, and so hastens away to join the greater stream in the valley below. Woodthorpe, to which this lane leads, is an ancient as well as sequestered place, and contains not a few remnants of the olden time. Its venerable parish church—an edifice of the "decorated Gothic" style—was once an appendage of the great Abbey of Bolton; its almshouse, founded by some pious soul in the reign of Edward VI., is a quaint, ivy-mantled edifice; and its vicarage—in every thing a meet abode for the messenger of peace—is touched with the same old-world aspect. Even the dozen of cottages of which our hamlet is composed are so many antique studies for an artist's pencil; their thatch, their walls,

their latticed windows, all afford unequivocal symptoms of old age; yet of that old age, which Cicero so highly admires, in which there is something of youth—in *quo est aliquid juventutis*—for they are all either rose-embowered or covered with clustering honeysuckle, and their little gardens, visible over low moss-crowned walls, are full of marigolds and stock, and wall-flower and sweet-pea, as if nature, ever youthful, would fain cast the charm of rejuvenescence over the frail and perishing work of human hands.

It was toward the close of a lovely day in June that a traveling-carriage, drawn by four horses, whose jaded appearance indicated that they had performed a long journey, turned from the highway into the sequestered lane we have referred to. The vehicle was covered with traveling-boxes, of various shapes and kinds, and on the rumble was a female servant, whom fatigue had evidently overpowered, and who was fast asleep. The carriage had come from the nearest railway station, some twenty miles off, with the same horses, it having been impossible to obtain any others by the way. Its interior was occupied by two sisters, both young, and, although differing from each other in some respects, possessing no small degree of personal charms. They had come all the way from the great metropolis, and were evidently wearied with so long a journey. As the carriage turned into the lane, one of the young ladies addressed her companion.

"We must be near our destination now, Gertrude," she said, with a tone of weariness, looking at her watch. "We have been three hours upon this interminable road! Heigh-ho! I am really very tired. But where are we going now? Oh! I presume this lane must be the approach to the mansion of our primitive aunt."

"I dare say it is, Elizabeth, but we shall soon know," replied the younger of the two sisters, letting down the carriage window. "Ah!" she continued, "what a pretty road! Do look at those lovely hawthorns in full blossom! Well, I must say, if Woodthorpe be any thing like the promise which this quiet lane gives, I shall not wonder that Aunt Hartley is happy in her seclusion."

"Pooh! nonsense, Gertrude," was the reply, uttered with something not unlike petulance. "How can you talk so? What conceivable happiness can there be in such a condition? No balls, no theater, nothing, absolutely nothing! Why, one might as well be a vegetable, as live in such dismal tranquillity. I really wonder at you!"

"O Elizabeth!" was the only reply to this rhapsody; but it was uttered in a sweet, deprecating tone of voice.

A few minutes more, and the carriage had passed through the hamlet, to the vast wonderment of its simple inhabitants, and entered a gateway leading into a fine avenue, and, after a drive across a beautifully-kept, as well as extensive lawn, pulled up at the door of "Woodthorpe Hall."

"What an unexpected pleasure! And you have really come to see me at last!" exclaimed Mrs. Hartley, after cordially welcoming her fair relatives.

"Indeed we have, dear aunt," said Gertrude Warburton; "and I am sure we should have been glad had we been able to do so before. But how well you look after so long a time. It is quite an age since we saw you last."

"A long time, indeed," said Mrs. Hartley, smiling; "no less than some six years! And what an alteration that 'long time' has made in both of you, my dear girls. You were both quite children when last I saw you. I am sure I should not have known you, had we met by accident. But where is papa? You have not traveled alone surely?"

The young ladies explained that it had been necessary for them to do so, as their father could not possibly accompany them, referring Mrs. Hartley for particulars to a letter which they presented to her. Leaving the ladies to the various and innumerable mutual inquiries and explanations incident to the occasion of such a meeting, we must now present our readers with a few retrospective observations re-

quisite to the comprehension of the course of this narrative.

Woodthorpe Hall—or the "Old Hall," as the villagers were wont to call it—was the manor-house of the fine estate that lay around it. The late proprietor, Mr. Hartley, had left it as the residence of his widow, who, possessed of a comfortable jointure, in addition to the interest of a large fortune of her own, had continued to reside there. She had no family, and, although still in the prime of life, she preferred, to all those scenes of gayety she was so well fitted to adorn, the rural quiet of her beautiful residence, where she devoted her whole time to the labor of doing good. There was not a cottage within many a mile of the benevolent lady's abode the inmates of which had not, in some way or other, been benefited by her ready and active benevolence. Her two nieces, Elizabeth and Gertrude, were the daughters of her only brother, Mr. Warburton. He had married an heiress of large fortune and aristocratic connections, but had not long enjoyed the happiness of domestic life, his wife having died a few years after his marriage, leaving the two infants to his charge. From the period of his becoming a widower, Mrs. Hartley had seen but little of her brother. He had sought relief from the bitter sorrow his bereavement occasioned by plunging into the gayest society of the metropolis, and this was foreign to Mrs. Hartley's inclinations. She had seen her beautiful nieces but once during a visit some years prior to the time we are now referring to; and it was with extreme delight that she beheld them again on their visit to Woodthorpe—a visit of which she had, to her surprise, received no intimation.

Elizabeth and Gertrude Warburton were eighteen and sixteen years of age respectively. They had received an excellent education; they possessed a large share of personal attractions; they were both naturally amiable; but they had not been brought up under the care of a mother; their father was almost always from home; they were, moreover, heiresses, and thus there were many circumstances calculated to render them proud and wayward. Mrs. Hartley had considerable suspicion of this, and had learned to regard Elizabeth especially an *enfant gâté*.

The letter which her nieces presented

to her from her brother conveyed to her some information of a most serious and painful kind. She learned from it that Mr. Warburton's affairs had become much embarrassed, and it had become necessary for him to accept of a foreign appointment, which his interest with the government had enabled him to procure. He was obliged, he stated, to leave England without delay, and, in so doing, he left his daughters to Mrs. Hartley's care, confident that her affection would supply to them, in a great measure, the loss consequent on the painful condition of his affairs, and would make up to them for his own absence. The letter contained many expressions of deep regret at the unhappy turn his affairs had taken, and concluded with the hope, rather faintly uttered, that neither Mrs. Hartley's fortune, which had remained in his hands, nor the fortunes of the two sisters, which they inherited from their mother, but which had also been left in his charge, would be found to suffer by his own private difficulties.

#### CHAPTER II.

THE tidings communicated by Mr. Warburton's letter appeared to his sister to be of so much moment, that, on the day after her nieces had arrived at Woodthorpe, she took an opportunity of conversing with them on the subject. She was not surprised to find them entirely reconciled to their father's departure, and that they only regretted the loss of the gay society to which they had been accustomed.

"We have seen so little of papa for many a day," said Elizabeth Warburton, "that his absence will scarcely make any difference; but—but—I confess——"

"Pray, do not hesitate, my dear," said Mrs. Hartley, with a smile; "I can guess what you are about to add."

"You know, aunt," continued the young lady, "we have been so accustomed to see a good deal of company, to go to places, and so forth, and you know that our expectations entitle us to something of the kind, so that——"

"I am fully aware of it, my dear Elizabeth," observed Mrs. Hartley; "but you must, I am sure, admit that whatever you may, as you say, be entitled to, your happiness is your papa's primary consideration."

"Perhaps so," replied the young lady, with a tone which to Mrs. Hartley's astonished ears sounded like that of vexation; "but how our happiness can be of such moment, I am unable to perceive, unless it consist in our being buried alive in this old place, with the view of a wide common, and a few miserable cottages, to take up our attention."

"O Elizabeth!" said Gertrude, in a soft, deprecating voice; "I am sure it is a lovely place, and for my part——"

"For your part," interrupted her sister, somewhat pettishly, "you like it of all things. Oh, to be sure! you are so romantic. Nothing but woods, and fields, and meadows, and rivers for you. You must be gratified now, I am sure!"

"My dear girls," observed Mrs. Hartley, without taking any notice of her niece's petulance, "you have both been hitherto entirely unaccustomed to a country life. You can not be expected to pronounce a very accurate judgment on the subject. I must beg you to withhold your opinions till you have had some experience. Meantime, give me the pleasure of your company. I am going to the village, and the distance is very short."

The young ladies cheerfully complied with their aunt's request. The day was charming, and the lane leading to the hamlet would have delighted any admirer of rural scenery. It was almost wholly overshadowed by trees, which on one side formed the boundary of the noble park around the "Old Hall." The roots, in some instances, crept over the pathway, and the huge trunks were covered with moss and many-colored lichens. The lane itself, rarely used except by foot-passengers, was nearly overgrown with grass, and on one side a sloping bank was covered with wild flowers. Gertrude was enchanted with the quiet beauty of the place, but her sister exhibited no disposition to admire the charms of nature so lavishly spread around her. On arriving at the hamlet, Mrs. Hartley, who had been endeavoring to interest and amuse her young friends, stopped before the gate of one of the pretty cottages already referred to, and stated that she was about to visit one of her pensioners, a poor woman, who had long suffered from ill-health, and who required the sympathy of her neighbors—inviting her nieces, at the same time, to accompany her.

"No, I thank you, aunt," replied Eliza-



beth, with considerable haughtiness of manner.

"Well, Gertrude," said Mrs. Hartley, "what say you? Will you not come in?"

"I prefer remaining with Elizabeth, if you please," said Gertrude, with some hesitation.

"Very well," said Mrs. Hartley; "I shall not keep you long waiting."

During Mrs. Hartley's absence, the young ladies walked slowly along the lane, at first in silence, and at length Elizabeth addressed her sister.

"I am sure," she said, in a tone of vexation, "papa could not have considered the situation we should be placed in here, and that for nobody knows how long. Only think, Gertrude, of the dullness of the place! And to be asked, too, to visit the sick and the poor! I shall at once write to papa on the subject."

"Perhaps papa did not consider all these things," observed Gertrude; "but you know, Elizabeth, it is very good and kind of aunt to do what she can for the poor. I think we should have gone into the cottage with her. I wish you had not refused so abruptly."

"It is all very well for old people to occupy themselves with such things, and all very kind, I dare say," said her sister, "but it is too much to expect from us. Besides, I can not bear to see people who are poor and wretched; it makes me ill. But here comes the old lady; she has certainly not detained us long."

Mrs. Hartley advanced toward her nieces, with a face beaming with cheerfulness and benevolence.

"The poor woman is better to-day," she said. "I am sure, had you accompanied me, you would have been charmed with the neatness and cleanliness of her dwelling. I shall now show you a delightful path which leads toward the Hall, after passing through the wood, and along the bank of the river."

Mrs. Hartley had observed with some pain the reluctance of her nieces to accompany her into the poor woman's house, but her good sense led her to refrain from any immediate reference to the subject. Finding, however, that her companions were more than usually silent during the walk, she took occasion to make a few remarks, such as would afford them an opportunity of expressing their sentiments.

"Look at that charming view," she said, as they arrived at an eminence commanding an extensive prospect. "How lovely are those distant fields, with the river shining in the sun! How picturesque! What a blessing is the gift of health, which enables us to contemplate such a scene!"

"Lovely indeed!" replied Gertrude, with enthusiasm; "what a charming picture it would make, with that distant spire peeping from among the trees!"

"What an affliction it is," pursued Mrs. Hartley, "to be deprived of the enjoyment which the fresh air and scenery like this afford! The poor creature whom I have just been visiting has been confined to her bed for several years." The young ladies were silent, and their aunt continued: "You know we are all alike exposed to the evils and sorrows incident to life, and one of the best modes of preparing for them is to learn how to sympathize with those who suffer. You have not been accustomed, I perceive, to visit the poor. I trust you will learn to do so."

"We are not ill-natured, I hope," answered Elizabeth, with some degree of hauteur. "When in London, we have often given our subscriptions in aid of the destitute, but as to visiting their houses, it is a very different thing; it is the business of the clergyman."

"True, it is," replied Mrs. Hartley; "but it is no less true that the possession of the means of doing good by our own personal exertions lays us under a solemn obligation to make the attempt. Moreover, the greatest enjoyment which wealth and prosperity bestow is undoubtedly that of showing kindness and doing good to others. It is, indeed, far 'more blessed to give than to receive.'"

"But at our age, you know, aunt, we are really not to be called on to go into disagreeable scenes, and expose ourselves to disease," observed Elizabeth.

"Whatever our age be," returned her aunt, "we are called upon to do good to those less favorably situated than ourselves. I am not aware that the precepts of divine truth have limited the practice of charity to any period of life. As to 'disagreeable scenes,' it is certainly painful to see others suffer; but by practice this pain is less and less felt; while the habit of expressing sympathy by acts of kindness constitutes a perpetual source of personal happiness to those who have

attained it. As to the exposure to disease of which you speak, it is certainly not our duty willfully to rush into danger; but such danger very rarely occurs, so rarely, indeed, that it can not form any excuse for our neglect of a sacred duty. But I do not mean to read you a lecture my dear girls. I have no doubt you will yet think with me on this subject."

Scarcely a day passed at Woodthorpe Hall without some incident calculated to direct the attention of the sisters to the practical exemplification of the virtue of charity. Mrs. Hartley, however, found her nieces, and particularly Elizabeth, by no means apt pupils. Neither of them, indeed, could be said to be unamiable, and Gertrude, in particular, exhibited much sweetness of disposition, but they were both the spoiled children of fortune, and had learned to give way to the instinct which causes us to shrink from witnessing scenes of wretchedness. The Sunday-school, carried on by the excellent clergyman of the parish, was a great object of Mrs. Hartley's care, and she in vain endeavored to enlist her nieces in the cause, and this not because they were deficient in religious sentiments, but from the same reluctance which operated against their active charity to the poor. The good lady, nevertheless, trusted that in due time her own example, and the kindly feelings of her nieces, would overcome their scruples, and render them willing coadjutors in her work and labor of love.

Thus three months elapsed, when an event took place which exercised an important influence upon the little household at Woodthorpe Hall. Mr. Warburton had visited the Hall prior to his departure from England, and had taken an affectionate leave of his daughters and his sister. The first intelligence they received, after his departure, plunged them in the deepest affliction. Mr. Warburton had taken ill soon after leaving the country, and, notwithstanding every effort, the malady had proved fatal. We shall not attempt to describe the grief of Mrs. Hartley, whose affection for her brother was ardent in the extreme; nor shall we endeavor to depict the sorrow of his bereaved daughters. The melancholy intelligence, however, was speedily followed by information which could hardly fail to aggravate the affliction. The solicitor who had charge of the family business wrote to Mrs. Hartley, stating that Mr.

Warburton's affairs were in irretrievable confusion, and that the large fortunes the young ladies were to possess had been entirely dissipated by his abortive efforts to recover the losses he had sustained. Her brother's property had been burdened with a large sum left to Mrs. Hartley by her father, but great fears were entertained lest that sum also should be entirely lost—the sale of the estates being barely capable of covering the numerous debts which had from time to time been incurred.

Under these painful circumstances, Mrs. Hartley found a change in her arrangements absolutely indispensable, and, as soon as it was possible to speak to them of business, after the great calamity which had occurred, she thought it proper to converse with her nieces as to her future plans. She told them that the loss of so large a part of her means rendered it wholly impossible to keep up her usual establishment, and that she had resolved to dispose of her carriages and horses, to let her residence, and to retire to a distance, in order to live in a manner suited to her altered condition. She endeavored at the same time to encourage her nieces, who were overwhelmed at the thought of the terrible consequences of their father's prodigality, by assuring them that happiness did not depend upon the possession of wealth, and that they should still have what was amply sufficient for all the comforts of life. Mrs. Hartley was remarkable for decision of character; and no sooner did she perceive the line of duty to be adopted, than she took measures to perform what was necessary, without delay.

"Our arrangements will be easily and quickly made, my dear girls," she said, addressing her nieces with the utmost tenderness; "but we shall have time enough, before leaving Woodthorpe, to receive the visitor in whose arrival we take so much interest."

A sudden blush suffused the countenance of Gertrude Warburton as her aunt said this, and she vainly endeavored to conceal her emotion, by turning to the bookcase as if in search of a volume.

"It is next week that Sir Lionel is to come," said Elizabeth. "Poor Sir Lionel! he, too, has lost a father."

Gertrude could now no longer control herself, and burst into tears. "Forgive me, dear aunt," she said, with a faltering

voice; "you know how intimate we have been; but I can not, I will not, see Lionel. Every thing is now changed—our relations are all different—"

"Calm yourself, my dear child," said Mrs. Hartley. "We are indeed reduced from a position of wealth to one of comparative poverty, but I am greatly mistaken in the character of Sir Lionel Lydgate, if the circumstance makes the slightest alteration in his sentiments toward us. I must beg you to remember that we are in no way to blame for the occurrences which have taken place; and although, instead of being rich heiresses, you are now portionless, the native qualities of your hearts have not been carried away with your fortunes, and you may be as happy as ever—perhaps even happier."

Gertrude looked up through her tears, and said, "Perhaps we may. But, dear aunt, do arrange so as to leave Woodthorpe within a week. Or write to Sir Lionel—probably he is unaware of what has taken place—and explain matters to him; but do let us avoid this visit—at least at present."

"What say you to this, Elizabeth?" said Mrs. Hartley, appealing to the elder sister.

"I must say," observed Miss Warburton, "that I am quite inclined to side with Gertrude. Yes, upon the whole, it will be better."

After some further conversation, it was arranged that Mrs. Hartley should write to Sir Lionel Lydgate, in reply to a letter received the day before, stating that she and her nieces were about to leave home for some time, owing to circumstances arising from Mr. Warburton's death, and expressing her regret at being obliged to ask him to postpone his intended visit.

Sir Lionel had but recently entered on the possession of his patrimonial estates. He was a young man of great amiability and excellence of character. He was a few years older than either of her nieces, and, as the son of her old friend, Sir Hargrave Lydgate, Mrs. Hartley had always rejoiced at the intimacy between him and the two sisters. But a new light now dawned upon her, and she discovered—not without anxiety and pain—that the young baronet was the object, to Gertrude Warburton, of an affection much warmer than that of mere youthful friendship.

At first she felt somewhat at a loss to

comprehend why her niece so earnestly desired to avoid meeting with Sir Lionel; but, on considering the matter, she perceived that the desire was traceable to the same sentiment of pride, the operation of which on the minds of her young relatives she had already so often deplored. On the supposition that a mutual affection subsisted between Gertrude and Sir Lionel, Mrs. Hartley now perceived that she might, in her altered circumstances, shrink from affording any encouragement to her lover, and that, too, from motives of delicacy, lest it should seem that she took advantage of his predilection. It appeared to her, indeed, that her niece was somewhat too sensitive on the subject; but, altogether, it seemed to her desirable to put the mutual affection she presumed to subsist to the test of a little time and difficulty, which, after all, she felt assured would tend to the good of both parties. Mrs. Hartley therefore acceded to the wishes of her young relatives. Woodthorpe was let to a neighboring family of distinction, who were about to make some extensive alterations on their own mansion; by the aid of her agent, a residence was secured in a secluded district on the Welsh coast, and Mrs. Hartley, with many tears, bade farewell to her abode, taking care to provide, as far as her reduced circumstances permitted, for the comfort of her various pensioners. In order to secure uninterrupted privacy in her retirement, until the settlement of her brother's and her own affairs should be completed, she thought it desirable to conceal from her acquaintances the place of her future abode, and she arranged that even her letters should be sent to the care of her solicitor, by whom they were to be transmitted to her hands.

#### CHAPTER III.

THE district in which Mrs. Hartley had thus fixed her residence was beautiful in the extreme. The cottage was within a mile of one of the most picturesque villages on the Welsh coast; it was separated from the beach only by a single field; a sparkling river flowed into the sea at a little distance; behind it was an extensive wood; and from a neighboring height, close to the sea-shore, on which were the ruins of an ancient fortress, a magnificent view could be obtained, not only to sea-

ward, but toward the Welsh mountains. Mrs. Hartley could not but feel very acutely the great change which had taken place in her circumstances, but her sound sense, and her sterling, but unostentatious piety, checked every disposition to murmur or repine, while her tender interest in her fair nieces prevented her from exhibiting that sadness, which, in her condition, would have been so pardonable, lest by so doing she should depress their spirits more than the sudden and unexpected sorrows and vicissitudes to which they had been subjected rendered unavoidable.

It is the happy peculiarity of youth, that nothing but great and irremediable evils produce permanent depression; and before a year had elapsed, Mrs. Hartley had the satisfaction to find that the course she had taken had been accompanied with great advantage. Thrown so completely upon their own resources, no longer obtaining from others the means of enjoyment, the sisters found that happiness was by no means incompatible with retirement from the world, and that it was much more within their own reach than in their former circumstances they could have believed it to be. Elizabeth, who had been no admirer of rural scenery, now took an enthusiastic delight in it, devoting herself to the art of painting, while her sister cultivated her fine taste for music, which, in more prosperous times, she looked upon with indifference. But the change in their circumstances produced a still more important alteration in their sentiments. Although exposed to no privation—for their aunt's income, although not large, was adequate to their wants—still, their descent from a state of opulence to comparative poverty might, relative to them, be termed adversity, and it did not fail to produce important effects. The experience of evil ourselves is a great source of pity for others; and hence it is that among the poor their exists—to their honor be it spoken—a far larger amount of mutual sympathy for each other's woes than among those whose circumstances place them beyond the reach of adversity. This truth was exemplified in the instance we refer to. The two sisters, who had been unaccustomed to works of charity, devoted themselves, with humble but earnest solicitude, to the performance of many acts of kindness and beneficence to their poorer neighbors, and gladly joined

their aunt in her various benevolent projects, so far as their now limited means permitted them. Thus the trials of life proved to them the source of moral beauty, which added immeasurably to their personal charms; and Mrs. Hartley, rejoicing in the change which had thus occurred, felt inclined to think that the price at which it had been purchased was not too costly.

During the year which had passed since her departure from Woodthorpe, Mrs. Hartley had received her correspondence through her solicitor, in accordance with the arrangement already mentioned. Among her letters were several from Sir Lionel Lydgate. The baronet had, it appeared, visited their former residence, and had vainly endeavored to discover their present abode. In his letters, he earnestly besought Mrs. Hartley to furnish him with her address. He stated, in delicate terms, that he was aware of the circumstances which had induced her to remove from Yorkshire, and which he greatly deplored; and he referred to his long acquaintance with her nieces, and the friendship so long existing between their families, as a reason wherefore she should permit him to pay his respects to her and the young ladies in person. Gertrude, too, had received a letter from Sir Lionel, couched in still warmer and more earnest terms. All this, it can not be denied could hardly fail to prove gratifying, for it afforded no inconsiderable presumption that, notwithstanding the reverses they had experienced, the sentiments of at least kindness and friendship which Sir Lionel had always expressed had undergone no alteration. Their affairs, however, were still in an unsettled and unsatisfactory state, owing to the proverbial tardiness of legal matters; and, after due deliberation, Mrs. Hartley had written in reply, expressing her regret that, owing to the painful circumstances which had taken place, she could not, for the present at least, accede to Sir Lionel's wishes.

During the spring of the year after Mrs. Hartley had taken up her abode at "the Cottage," as her residence was called, an incident took place which, as we shall see, produced important results. Wandering, one charming evening, to the ruins of the fortress already alluded to, to enjoy a view of a magnificent sunset, the ladies perceived an artist busily engaged in making a sketch of the place. This meeting



led to an acquaintance with the stranger whose name, it appeared, was Morgan, and who had been residing for some weeks in the village, occupied in the enthusiastic pursuit of his favorite art. Mr. Morgan was not only eminently gifted by nature, being remarkably prepossessing in appearance, but highly educated. He had been at Oxford; he had been abroad; he was possessed of musical as well as artistic skill, and his manners were amiable and agreeable in a high degree. So much was Mrs. Hartley taken with him, that it was with the highest satisfaction she agreed that Miss Warburton should receive some instructions in drawing which Mr. Morgan proposed to give, and which, from his great proficiency, she felt assured would greatly add to the skill her niece had already attained. This arrangement, however, led to consequences which the good lady did not anticipate. The pursuit of their delightful art led the fair sisters and the accomplished stranger among the loveliest scenery in their vicinity—the lonely sea-shore, the shady woods, the time-worn ruins. It led to an interchange of thought and sentiment; and ere they were aware of it, Mr. Morgan and Miss Warburton had begun to regard each other with a degree of interest which each found to be equally irresistible. This result was not miraculous. Both were young, amiable, and highly intelligent; the circumstances in which they were placed were somewhat romantic, and altogether such as were calculated to give birth to, and to foster, the tender emotions of the heart. Week after week passed rapidly away; Mr. Morgan continued to postpone his departure, and he at last became almost a permanent inmate of “the Cottage.” Mrs. Hartley soon suspected the state of matters; and a little conversation with her niece quickly converted the suspicion into certainty. It was not, however, without deep anxiety that she made the discovery that the amiable stranger was the object of Elizabeth’s affection; for, however otherwise acceptable he might be, his birth, his prospects, his history, were all in a certain degree involved in mystery; and, as her niece admitted, he had said nothing that betrayed an affection for her, such as that which, she could not deny, she had learned to regard him. Time wore on, till spring was at length merging into summer. Mr. Morgan, who had prolonged his residence

in the village much beyond the period he had originally intended, had at length fixed the day of his departure. The intelligence was received by his fair friends at the Cottage in silence, for they felt a natural delicacy in saying how much they must necessarily feel and regret the loss of his society, knowing that they had no claim to urge as a reason for his prolonged stay.

“I can not describe to you, my dear Mrs. Hartley,” said Mr. Morgan, “how deeply I regret the necessity which compels me to go to London.”

“I assure you we shall all miss you very much,” said Mrs. Hartley.

“You will soon forget us, I dare say,” said Gertrude, with a smile, “amid the bustle of the great city.”

“No, no; never!” was the reply. “I have never spent happier days than those I have passed here. I shall soon return; the matters I have to attend to will be speedily settled. But come, this is my last evening; shall we not complete the sketch of the old manor-house?”

“Yes,” said Miss Warburton, who had been hitherto silent; “I should like to do so very much. My sketch requires a few touches only, to render it tolerably perfect.”

As she spoke, she arose; and, having attired herself for the projected walk, she and Mr. Morgan set forth alone, neither Mrs. Hartley nor Gertrude being inclined to accompany them.

The manor-house referred to had been the family residence of the wealthy proprietor of an estate which extended for many miles along the coast, and into the interior of the country. The ladies had frequently visited it, attracted not only by the delightful walks which led to it through the woods, but by the quaint and picturesque appearance of the mansion itself. It was situated on the banks of the stream which fell into the sea near the Cottage, from which it was distant about a mile. It was built in the Elizabethan style of domestic architecture, and was surrounded by an extensive park, dotted here and there with ancient trees. The house, however, had been long untenanted; the present owner of the property having lost his parents when a mere infant, and having been brought up by his relations in the south of England.

Mr. Morgan and his fair companion sauntered slowly along the path which

led through the wood toward the old manor-house, the sketch of which it was their object to complete. Their conversation was less animated than usual, for both felt deeply their approaching separation. Morgan started various topics, but neither seemed to be able to pursue any lengthened discussion.

"How strange it is," said Elizabeth, "that the owner of this noble property should never visit it, and should leave his numerous tenantry to the care of a mere agent!"

"Certainly it is," said Mr. Morgan; "but you know he is said to be young. Indeed, I believe it is not many years since he attained his majority; and, moreover, he has been so much abroad, that perhaps he prefers a foreign residence."

"That would be but indifferent taste," replied Miss Warburton. "What higher happiness than to reside here, in so beautiful a district, and with such obvious appliances and means of usefulness."

"Let us hope that such advantages may not be willfully thrown away," added Mr. Morgan.

On arriving at the old house, an unusual degree of activity seemed to prevail in its neighborhood, which excited Miss Warburton's surprise; and, meeting the old gate-keeper, Mr. Morgan inquired the reason of it. He was informed that orders had been received by the agent of Sir Frank Ludlow to fit up the house, which was to be immediately furnished; and it was expected the baronet would soon make it his permanent residence. The old man, however, thought it strange that Sir Frank had never paid a visit to his patrimonial mansion; but he supposed it would not be long before he came among them.

"I hope it will not," said Mr. Morgan. "I am sure he would be well received by his tenantry. But come, Miss Warburton," he added; "we must finish our drawing."

Elizabeth seated herself on the trunk of a fallen tree, which was the point from which the drawing had been taken; and, opening her sketch-book, began her work. This, however, was no easy task. Her mind was entirely preoccupied. Mr. Morgan seated himself beside her, and pointed out some defects. Here, a deeper shade was required; there, some hardness on the outline must be removed; and then the foreground required to be worked up—

but the whole business was merely mechanical, so far as the fair artist was concerned. At length she could not endure the irksomeness of a task in which she felt so little interest, and declared that she was tired of it, and that it would do very well.

They resumed their walk, wandering away into the woods, through which the setting sun was now casting his rays. The branches, covered with the new green leaves of spring, were waving gently in the soft breath of the west wind; and the pleasant whispering of the leaves mingled with the murmur of the sea, as the waves broke upon the beach beneath the wood. The lovers (for such they were) wandered on toward the Cottage, each absorbed in thought; and whether it was the beauty of the scene around them, breathing as it did of hope and happiness, or whether it was the solitude of the place, or whether it was the near approach of the hour when they were to part, we can not say; but Mr. Morgan whispered to his fair companion sentiments which found a ready echo in her own heart. He told her in impassioned terms how he loved her; how she alone could render him happy; how he had long wished to say so, and had been checked by the fear lest it should be deemed presumptuous. He spoke of having good prospects; and begged, with all the ardor of sincere affection, to be allowed at least to hope that one day he might call her his own Elizabeth. To all the fervid eloquence with which the artist pleaded his cause, there was but a brief reply—a reply faintly spoken: it was but one little monosyllable—but brief as it was, and faintly as it was uttered, it contained for the enraptured hearer a whole volume, and filled him with joy.

O Love! how wonderful is thy chymic power! It is thy province to touch every thing on which thou lookest with beauty; nay, even to fill with visions of loveliness the soul in which thou takest up thine abode! This was exemplified in Elizabeth Warburton. Never till Morgan had confessed his love for her, had she been aware of the depth of her regard for him; and now that she was assured of his affection, she felt possessed of some priceless treasure, which filled her with a deep and silent joy, and suffused every object with the roseate tints of hope.

Mr. Morgan called next day. Elizabeth, who had seen him approaching, quitted

the little drawing-room, from some instinctive sentiment, we know not what, and he was ushered in. Mrs. Hartley was alone. After some common-place conversation, Mr. Morgan begged she would allow him to mention a subject in which he felt deeply interested. He told the good lady of his love for her beautiful niece; spoke of the presumption he exhibited in thus declaring his affection; and pleaded his cause with the most impassioned earnestness. A long, and to the parties a most interesting, conversation ensued, in which Mrs. Hartley expressed the highest confidence in the principles of her visitor; and although he was aware that he was still much of a stranger to her, he felt unspeakably gratified by the thorough trust in his honor which the lady evinced. In a word, he received the highest encouragement. Mrs. Hartley had become fully aware of Elizabeth's sentiments, and she felt it would be cruel to oppose a barrier to what might be absolutely essential to her niece's happiness. She therefore accepted the youthful artist as the accredited suitor for Elizabeth's hand, only stipulating that both should patiently wait till circumstances enabled them to be united. To this Mr. Morgan gladly assented, and soon after bade a tender adieu to the occupants of the Cottage.

## CHAPTER IV.

FROM the coast of Wales and its picturesque scenery, we must now conduct our readers to the metropolis, and into a private dining-room of one of the principal hotels, where two gentlemen—Sir Lionel Lydgate and Sir Francis Ludlow—who had been college companions at Oxford, but had not met for two years, were seated at table, discussing, over a glass of wine, a variety of interesting topics. Their college days, their present occupations, and their future plans, were all reviewed in a manner which evinced that a cordial intimacy subsisted between the companions.

"And you are tired of the Continent at last, Ludlow?" said Sir Lionel. "I scarcely expected, I must confess, that your admiration of the sunny skies of Italy would have been so short-lived."

"A touch of the *maladie du pays*, perhaps," said Sir Francis Ludlow, with a smile. "After all, there is nothing like

old England. Why, the truth is, I am very much disposed to settle down as a quiet country gentleman."

"Well done!" was the reply. "I am heartily glad of your resolution. The truth is, I myself, if not quite wearied with France, am at least tired of London and London life, and have been long tempted to adopt your plan—if plan it be—to go and live among my tenantry, like the 'fine old English gentleman all of the olden time.'"

"I am fitting up my old house in Wales already," observed Sir Francis; "so you see, my boy, I am actually making some arrangements. The fact is, you must make a run down with me, and give me your advice on some points of detail. I can promise you some shooting, you know."

"Most happy! But I say, Ludlow," returned his companion, "do you really mean to become a hermit? How on earth are you to spend your time, so completely isolated from society?"

"My good fellow," replied Sir Francis, "there is no necessity to suppose a condition so very desolate. You know my tastes; I have a capital library; some fine pictures; and I am myself given somewhat to the study and practice of art, so that, with an occasional visit to London, I shall, I dare say, do tolerably well."

"I suspect there may be more in all this than meets the ear," observed the other, archly. "You had better make a merit of necessity, and confess it at once."

"Well! well! replied Sir Francis, laughing, "I suppose I must. I have then the prospect in view of being made 'the happiest of men.'"

"I congratulate you with all my heart," said Sir Lionel. "But come, you must not be permitted to make an imperfect confession, my dear fellow. Let us have a bit of this romance of yours. Knowing you as I do, I feel certain there is some romance in the affair!"

"Why, the truth is," replied Sir Francis, after a hearty laugh, "I dare say there is some romance in it, as you suppose, but you must excuse my being somewhat close at present. I must beg you to exercise your patience, and I promise you shall be fully satisfied with the result."

"Well—well, we shall say no more about it at present, since you will have it so," added Sir Lionel. "Now I think

I am bound to be at least as candid as yourself. What if I make a similar confession?"

"Excellent!" exclaimed Sir Francis. "What! do you mean to say that you intend to marry? Eh? All settled—eh?"

"Yes!—yes! all settled, I assure you; but I am not to be entrapped into any further revelation," was the rejoinder, "but in a day or two I shall unfold to you the mystery."

It was eventually arranged by the two friends that they should journey together to Wales, Sir Lionel having promised to give his advice upon some matters as to the mansion-house on Sir Francis Ludlow's property, to which reference has already been made, as situated in the neighborhood of Mrs. Hartley's abode, and which, as we have seen, was fitting up for the reception of its owner. Some months had already elapsed since the incidents occurred at the Cottage in Wales, which we have related in the preceding chapter. During that period occurrences had taken place of considerable moment to Mrs. Hartley and her nieces. Certain legal arrangements, which the confusion in the affairs of the late Mr. Warburton had rendered necessary, had been completed. It was found that the fortunes of both the young ladies had been entirely dissipated, but Mrs. Hartley's own property, which had been more firmly secured to her than she had been aware, had remained intact; and thus all immediate cause of anxiety was entirely removed, and that lady already contemplated a return, at no distant period, to her favourite Woodthorpe. Meantime it was obvious to her that a vast improvement, as already mentioned, had taken place in the sentiments of her nieces; both of whom had cordially joined her in all those works of charity and beneficence, which had been to herself a source of such unmingled satisfaction. Mrs. Hartley had been unable to resist the importunities of Sir Lionel Lydgate, from whom her residence had been so long effectually concealed, and the youthful baronet had paid a visit to the Cottage, and found it no difficult matter to persuade Mrs. Hartley to consent to his marriage with Gertrude, for whom his early affection had suffered neither change nor diminution. Meantime, also, Elizabeth had been in constant correspondence with Mr. Morgan, and had

received the happy intelligence that his affairs were so prosperous that he would shortly return to Wales and claim the fulfillment of those promises which he declared constituted the happiness of his life.

It was a beautiful evening in the month of August. Sir Lionel Lydgate had accompanied his friend, Sir Francis Ludlow, to his house, where he had arrived in the morning, and he was seated in the pretty drawing-room of the Cottage, discussing with Mrs. Hartley, in the absence of the two sisters, some important preliminaries relating to his approaching marriage. Gertrude and Elizabeth had proceeded to the village, on some mission of benevolence, which their aunt had devised possibly, it may be, to have a private conference with Sir Lionel.

"I can not conceal from you, my dear Sir Lionel," she said, "that I am not without anxiety regarding this singular engagement which has been made with Mr. Morgan. What you yourself said on the occasion of your former visit has not had the effect, as you may suppose, of tranquilizing my mind. The truth is, that amiable and excellent as the young man is, he is really a stranger to us. It is right I should have your opinion on this subject, regarding you, as I now do, as a member of my own family."

"Certainly, my dear madam," said Sir Lionel. "Now, to speak candidly—and I trust you will pardon my doing so—it does appear to me that you were somewhat unguarded, perhaps somewhat precipitate, in so readily giving your sanction to the pretensions of one of whom you knew so little."

"That I quite admit," said Mrs. Hartley, "and I am very much vexed about it. But the truth is, the original evil lay in exposing Elizabeth to the danger of forming an affection for a stranger. Subsequently, I had but little choice; and, in point of fact, I really entertain the very highest opinion of this gentleman, and have no manner of doubt that he is not only tenderly attached to Elizabeth, but that he is eminently qualified to make her happy."

"I am sure he must be a happy man, whoever he is," said Sir Lionel, "to possess the power of gaining so favorable an opinion from you. One thing is plain enough, that the attachment is a most disinterested one, and that circumstance



affords good ground for believing in its depth and sincerity."

"Most assuredly it is," rejoined Mrs. Hartley; "as for ourselves, we have—or rather I myself have—been perfectly unsophisticated; and, to do Mr. Morgan justice, he said he was an artist entertaining those hopes which his enthusiasm for his beautiful art inspired. I took care, too, that he should be fully aware that my niece had not one farthing of her own, and that I myself was scarcely in a better condition. But you must really give me your advice and assistance."

"You may command both most readily," said Sir Lionel; "but what can I do?"

"The truth is, I wish you to institute some suitable inquiries in London about Mr. Morgan," said Mrs. Hartley. "You need not mention this wish of mine to Elizabeth; but for my own satisfaction I really must know something about connections, prospects, and so forth; you understand me?"

"Oh! I can do that easily enough," was the reply; "but do you not expect Mr. Morgan in a day or two?"

"Yes," said Mrs. Hartley; "as I mentioned to you already, he writes that he will be here probably to-morrow. Now you know you are quite entitled to speak with him when he arrives."

"I shall certainly do so," replied Sir Lionel; "and, perhaps, it may be better to delay communicating with my agent on the subject till I have had the opportunity."

"My dear Sir Lionel," resumed Mrs. Hartley, "he has written for my consent to his marriage with Elizabeth, which he wishes to take place soon; and, in fact, he is to ask the dear girl to fix the day."

"I see how it is," rejoined the baronet; "these poets and artists are always sanguine; but we must act with caution. Pray, what reply have you given?"

"Oh! nothing yet. Mr. Morgan is, as he says, to have my answer and dear Elizabeth's from our own lips, so that I have not written. But here are the girls. Do let what I have said be perfectly confidential."

The young ladies now returned from their benevolent mission. The evening passed away in the most delightful manner, and Sir Lionel took his departure at a late hour, and wended his way through

the wood toward the abode of his friend, Sir Francis Ludlow, stating that he would call early next day to escort the ladies to the Hall, in order to pay a visit to their distinguished neighbor, and welcome him to his patrimonial seat. This Mrs. Hartley and her nieces, after some little persuasion, agreed to do, with the greater willingness, as they intended, in a few days, to take their departure to Yorkshire.

#### CHAPTER V.

NEXT day, Sir Lionel made his appearance at the Cottage, and the ladies accompanied him to the manor-house. They had not visited it for some weeks, but they had not ceased to take a lively interest in the improvements which had been made, both around it and on its interior. As they drew near the house, they were surprised at the alteration which so short a period had effected. The workmen had all disappeared; the timber, the mortar, the workmen's tools, were all cleared away; every thing was in order. The party were shown by a footman into a magnificent drawing-room, newly and elegantly furnished with every thing that wealth and good taste could procure or suggest. Sir Francis, they were informed, was busily engaged inspecting some work in the garden, but would return very shortly. Meantime, Sir Lionel and his fair companions made the tour of the drawing-room, and admired the charming view from the great southern window.

"Look here, Elizabeth!" exclaimed Gertrude, with a voice of extreme surprise; "surely these are your sketches!" and she pointed to some water-color drawings in rich frames hanging on the walls.

The amazement of Miss Warburton was extreme, as she recognized the drawings she had made under Mr. Morgan's instruction, and beheld also others, the work of the artist himself. She looked to Sir Lionel for an explanation, who was heartily laughing at the expression of complete bewilderment which he saw in her beautiful countenance, when suddenly the door opened, and the artist himself entered the apartment. Elizabeth uttered a scream of joy, and, forgetful of every thing but the object of her affection, darted toward him, and received a tender embrace.

"My dear Mrs. Hartley," said Sir Lionel, after the ladies had welcomed their unexpected visitor, "allow me to solve a little mystery, by introducing to you your old friend and mine, not as Mr. Morgan, the unknown artist, but as Sir Francis Ludlow."

"Pardon me, my dear madam," said Sir Francis, now no longer Mr. Morgan; "I have practiced somewhat unintentionally a little piece of deception. Listen to me for one moment!" And seating himself on a sofa beside Miss Warburton, who had burst into tears, he took her hand in his, and continued. "On returning from Italy, a short time before I had the happiness to make your acquaintance, I became aware that the condition of my tenantry had become, in some respects, very uncomfortable during my long minority, and I resolved to inquire into their state personally. I was wholly unknown to any of them, and it occurred to me as desirable to visit my property in Wales under an assumed name, in order that I might obtain accurate information. Adopting my mother's name, therefore, I took up my abode in your vicinity, amusing myself during my leisure in making some sketches, and thus I had the happiness of becoming acquainted with you. You know the rest. As a poor artist, a total stranger to you and my dear Elizabeth, you received me with a degree of kindness I shall never forget; and Elizabeth bestowed on me the priceless treasure of her love. I will not conceal from you that I was unspeakably charmed with the confidence you reposed in me; and that it was to me all the more invaluable, because you knew me but as a poor, and perhaps friendless, artist, and not as the owner of these lands. I did not deceive you; and for this I again entreat your forgiveness. I wished to enjoy for awhile the delight of knowing that I was beloved for my own sake. I wished, too, to prepare for you this surprise. I knew nothing at the time of my friend Sir Lionel's acquaintance with you; but I need not say

how much this enhances the delight I now feel."

Never was there a happier party than that which now met in the old manor-house. Every thing was satisfactorily explained; and, as may be presumed, Mrs. Hartley revoked the commission she had given to Sir Lionel to make inquiries as to the unknown artist in London.

We now transfer the scene of our story to Woodthorpe. A month after this happy meeting, a couple of carriages and four stood at the entrance of the Old Hall; the postillions were decorated with white favors; the bell of the fine old church of the village was ringing a merry peal, for Mrs. Hartley's beautiful neices had just pronounced their nuptial vows within the walls of the venerable building; the villagers at Woodthorpe were decked out in all their humble finery; and there was a general rejoicing on the glad occasion which restored to them their beloved benefactress, and beheld the happy event which had taken place in her family. At length the bridal party broke up, and as the afternoon sun of a fine October day was shedding his beams on the old woods surrounding Woodthorpe Hall, the happy couples entered their carriages, amid the loud congratulations of the assembled villagers, the vehicles dashed down the avenue through the picturesque hamlet and the shady lane which led from it, and bore away the two baronets and their lovely brides, no one knew whither, leaving the good Mrs. Hartley half blind with tears.

A few years rolled away, and Woodthorpe ceased to be the solitary place it so long had been. Youthful visitors began to frequent the abode of their grand-aunt, and were taught by their happy mothers, Lady Gertrude and Lady Elizabeth, to love and revere the venerable relative whose precepts and example so beautifully illustrated the duty of beneficence, and whose happiness consisted in the only true luxury—that of doing good.

From the Leisure Hour.

## AN INTERVIEW WITH THE SHAH OF PERSIA.

At a time when Persia occupies the attention of the political world, the following narrative, by Sir Robert Kerr Porter, will be found interesting in connection with, and illustration of, the striking portrait of the Shah, which was painted and engraved originally for the royal family of England, and now reengraved by Mr. Sartain for the *Eclectic Magazine*.

"The palace showed a spacious area, shaded with trees and intersected by water. In the center stood the splendid edifice, where his Majesty was to sit to receive the homage of his subjects. We were led toward the southern aspect of this place, the grand saloon fronting that way, where the ceremony of royal presentation was to be performed, and were carefully stationed at the point deemed best for seeing and hearing the great king. Before his Majesty appeared, I had time to observe the disposition of the scene in which this illustrious personage was to act so conspicuous a part.

"Rows of high poplars and of other trees divide this immense court, or rather garden, into several avenues. That which runs along the midst of the garden is the widest, inclosing a narrow piece of still water, stretching from end to end, and animated here and there with a few little *jets d'eau*, the margins of which were spread with oranges, pears, apples, grapes, and dried fruit, all heaped on plates, set close together like a chain. Another slip of water faced diagonally the front of the palace, and its fountains being more direct in the view of the monarch, were of a greater magnificence and power, shooting up to a height of three or four feet—a sublimity of hydraulic art which the Persians suppose can not be equaled in any other country. Along the marble edges of the canal and fountains were also placed fruits of every description, in pyramids; and between each elevated range of plates, with these their glowing contents, stood vases filled with flowers, of a beautiful

fabric, in wax, that seemed to want nothing of nature but its perfume. In a line, beyond these, was set a regular row of the finest china bowls, filled with sherbet. In the parallel files, down the sides of the wide central avenue, stood the khans and other Persians of rank, arrayed in their most costly attire, of gold and silver brocade, some of them wearing in addition the royal *khelat*, which usually consists of a pelisse lined with fine furs, and covered with the richest embroidery, their heads bound with cashmere shawls of ever color and value.

"The royal procession made its appearance. First, the elder sons of the king entered, at the side on which we stood, Abbas Meerza taking the left of the whole, which brought him to the right of the throne. His brothers followed, till they nearly closed upon us. Directly opposite to this elder rank of princes, all grown to manhood, their younger brothers arranged themselves on the other side of the transverse water. They were all superbly habited in the richest brocade vests and shawl-girdles, from the folds of which glittered the jeweled hilts of their daggers. Each wore a robe of gold stuff, lined and deeply colored with the most delicate sables, falling a little below the shoulder, and reaching to the calf of their leg. Around their black caps they also had wound the finest shawls. Every one of them, from the eldest to the youngest, wore bracelets of the most brilliant rubies and emeralds, just above the bend of the elbow.

"At some distance near the front of the palace, appeared another range of highly revered personages—mollahs, astrologers, and other sages of this land of the east—clothed in their more sombre garments of religion and philosophy. There was no noise, no bustle of any kind; every person standing quietly in his place, awaiting the arrival of the monarch. At last, the sudden discharge of the swivels

from the camel corps without, with the clang of trumpets, and I know not what congregation of uproarious sounds beside, announced that his Majesty had entered the gate of the citadel. But the most extraordinary part of the clamor was the appalling roar of two huge elephants, trained for the express purpose of giving this note of the especial movements of the great king.

"He entered the saloon from the left, and advanced to the front of it, with an air and step which belonged entirely to a sovereign. I never before had beheld any thing like such perfect majesty; and he seated himself on his throne with the same indescribable, unaffected dignity. Had there been any assumption in his manner, I could not have been so impressed. He was one blaze of jewels, which dazzled the sight on first looking at him; but the details of his dress were these: A lofty tiara of three elevations was on his head, which shape appears to have been long peculiar to the crown of the great king. It was entirely composed of thickly-set diamonds, pearls, rubies, and emeralds, so exquisitely disposed as to form a mixture of the most beautiful colors in the brilliant light reflected from its surface. Several black feathers, like the heron plume, were intermixed with the resplendent aigrettes of this truly imperial diadem, whose bending points were finished with pear-formed pearls of an immense size. The vesture was of gold tissue, nearly covered with a similar disposition of jewelry; and crossing the shoulders were two strings of pearls, probably the largest in the world. I call his dress a vesture, because it sat close to his person, from the neck to the bottom of the waist, showing a shape as noble as his air. At that point it devolved downward in loose drapery, like the usual Persian garment, and was of the same costly materials with the vest. But for splendor, nothing could exceed the broad bracelet round his arms, and the belt which encircled his waist; they actually blazed like fire when the rays of the sun met them; and when we know the names derived from such excessive lustre, we can not be surprised at seeing such an effect. The jeweled band on the right arm was called 'the mountain of light,' and that on the left 'the sea of light.'

"The throne was of pure white marble, raised a few steps from the ground, and

carpeted with shawls and cloth of gold, on which the king sat in the fashion of his country, his back supported by a large cushion. While the great king was approaching his throne, the whole assembly continued bowing their heads to the ground, till he had taken his place. A dead silence had ensued. In the midst of this solemn stillness, while all eyes were fixed on the bright object before them, a sort of volley of words, bursting at one impulse from the mouths of the mollahs and astrologers, made me start, and interrupted my gaze. This strange oratory was a kind of heraldic enumeration of the great king's titles, dominions, and glorious acts, with an appropriate panegyric on his courage, liberality, and extended power. When this was ended, all heads still bowing to the ground, and the air had ceased to vibrate with the sounds, there was a pause for about half a minute, and then his majesty spoke. The effect was even more startling than the sudden bursting forth of the mollahs; for this was like a voice from the tombs—so deep, so hollow, and at the same time so penetratingly loud. Having thus addressed his people, he looked toward the British *chargé d'affaires*, with whom I stood, and then we moved forward to the front of the throne. The same awful voice, though in a lowered tone, spoke to him, and honored me with a gracious welcome to his dominions. After his Majesty had put a few questions to me, and received my answers, we fell back in our places, and were instantly served with bowls of most delicious sherbet, which very grateful refreshment was followed by an attendant presenting to us a large silver tray, on which lay a heap of small coin, called a *sky*, of the same metal, mixed with a few pieces of gold. I imitated my friend in all these ceremonies, and held out both my hands to be filled with the royal largess, which, with no little difficulty, we passed through our festal trappings into our pockets.

"When the rest of the gratulatory compliments of the day had been uttered between the monarch and his assembled nobles, the chief executioner, our former herald, gave us the signal that all was over for that morning. We then retired, as we came, under his auspices; but, if possible, with still more pressure and heat than we had battled through on our approach."

Here the thought occurs, that if frail human glory—the glory of a man that



shall die, arrayed in vestures wrought by man's toil—can thus strike and overpower the sense, what must it be to witness “the glorious appearing of the great God and our Saviour Jesus Christ?” It was, doubtless, the consciousness of the strong impression which even human glory may make which caused the ancient belief that no man could look upon the Divine glory, and yet live. So when, in the year that king Uzziah died, the prophet “saw the Lord sitting upon a throne, high and lifted up,” and heard the hovering seraphim cry one unto another: “Holy, holy, holy, is the Lord of hosts: the whole earth is full of his glory!” he at once cried out: “Woe is me! for I am undone; because I am a man of unclean lips, and I dwell in

the midst of a people of unclean lips: for mine eyes have seen the King, the Lord of hosts.” But when a seraph had touched his lips with a live coal from the altar, and said: “Lo, this hath touched thy lips; and thine iniquity is taken away, and thy sin purged,” he beheld that glorious vision undisturbed. So shall all who believe the Gospel, redeemed by the precious blood of the Lamb of God, and sanctified by the gracious operations of the Holy Spirit, behold, with undazzled and admiring eye, that unutterable glory in which our Lord abides, and in which he shall reappear—that glory a mere glimpse of which struck the persecuting Saul, on his way to Damascus, blinded to the ground.

## CAN YOU AFFORD TO MARRY?

A CORRESPONDENT signing himself “Theophrastus” called attention very properly a day or two ago to another side of that unfortunate subject which we have lately discussed. We pointed out a mistake in our system with respect to young women—an important defect in their training. But there are men as well as women in the world. Is every thing right in our system as regards its effect upon men? We say in our system. We know, of course, that natural passion is strong, and that it never will completely obey reason and conscience on this subject as long as the world lasts. But, over and above nature, is there not something in our system, in our conventional standard of what is necessary to support married life, which throws enormous and gratuitous hindrances in the way of marriage, and so gives a great gratuitous stimulus to vice? Do we not make difficulties for ourselves here, even where nature makes none, and create by our system a huge mass of artificial temptation which need never have

existed? It is thought impossible in a large class of society now to marry unless you have £1,000 or £1,500 a-year. This is considered the rule. A person who dares to contemplate this step upon a more scanty basis is told that he does so on his own responsibility. The collective wisdom of society is against him. The horrors of poverty are before him, famine stares him in the face, and, what is still worse, he, his wife, and family will all be a burden upon their friends. In fact, it is wrong, plainly wrong, a positive sin, to marry upon less; you are seeking your own selfish happiness at the expense of the comfort, and probably the purse, of your relations, on whom you will very likely have to fall back soon, and to whom, at any rate, it will be a positive pain to see you struggling on in a wretched way, hardly keeping your head above water, and, in fact, having only—dreadful to think of!—enough to eat, and drink, and be merry with. In studied language you are told that you must consult your posi-

tion in society in taking this step, that you are accustomed to a certain style of living, and that you must not think of being happy without it.

Now, we are not going to cry up "love in a cottage;" we know that a certain income is necessary for comfort and happiness. But, when a whole class is completely seared from marriage by maxims of this kind, we must draw the distinction between a natural and a conventional standard of what a married man requires. It is not necessary for happiness that a man should live in a house near the Parks, or that he should even keep a man-servant or a Brougham, or that he should ride in Rotten-row, or that he should rush down with his family every three months by railway to Brighton, or Hastings, or Dover, for the benefit of his health. We assert this with confidence. Our opponents have a vast array of social authorities on their side of the question. They can bring an imposing muster of club sages; they can quote conventional rules and *dicta* from the oracles of Piccadilly, Pall-mall and St. James's street. We, too, are not wholly without maxims and saws on our side of the question with respect to what constitutes human happiness, for we have at our command the collective experience which has spoken, from the days of the Seven Wise Men to Dr. Johnson, and from the Proverbs of Solomon to the Proverbs of Martin Tupper.

But conventional maxims and authorities would not have so much influence as they have upon our young men on this subject were there not something to aid them in the attractions of the bachelor life itself. A man is asked out ten times as much before he is married as he is afterward. That is a great difference, and the man of 30, who has enjoyed three or four years of exuberant hospitality, has felt his value as a *convenient* member of the social system, and that, as an unencumbered man, he is in great request, is rather loth to exchange the importance and rank of the young bachelor for the homely position of the married man. How pleasant it is to receive several notes of invitation every post, to be asked to a great many more places than you can go to! What a sense of social dignity rises at the thought! All the world going after you and humbly soliciting your countenance, while you have only to pick the best out of the number for your patronage,

and to endure the bore of accepting their attentions! All this is very pleasant. It is true that amid all the glory and gayety of the bachelor life the heart will occasionally betray a gentle sadness, and a sigh will escape as a vision of a home and that which it implies crosses the mind of our much-solicited young bachelor. But he shakes it off, and rushes into the blaze of society again. If he is not really married, he can at any rate console himself with being married in imagination, or, as the scholastic phrase was, *in potentia*, to twenty young ladies, and twenty fresh ones every day. What is marriage to such a person as this but monasticism? It is retirement to a cloister, to a hermitage in the desert, and a cell in the rock.

But, whichever of these causes has most share in the undue postponement of marriage by a large class among us—whether it is that young men are frightened by the imposing show of conventional authorities and the prophecies of poverty that they hear on all sides, or whether it is that they want to enjoy longer the freedom and popularity of the bachelor estate, the result is the same in either case. A great law of Providence can not be neglected with impunity, and this undue, artificial, and unnatural postponement of marriage ends in a great blot upon our social system. Vice is the result, and vice creates a class of victims to indulge it. If Providence has ordained that man should not live alone, and if conventional maxims or mere empty fashion and the artificial attractions of society lead to overlooking, or superseding, or tampering with this law, the neglect of a Providential law will surely avenge itself in social disease and corruption in one or other part of the system. It is not, then, because we wish for a moment to encourage improvident marriages, but because we feel convinced that our modern caution here has outstepped all reasonable limits, has become extravagant, has, from being a dictate of natural common sense, become a mere conventional and artificial rule, the voice of empty fashion, and a gratuitous hindrance to social happiness and the designs of Providence, that we call serious attention to the subject.

The fear of poverty has become morbid, and men cry out not only before they are hurt, but before there is any reasonable prospect of it. They must see in married life a perfectly guaranteed and

undisturbed vista of the amplest pecuniary resources before they will enter upon it. They forget that married men can work, and that marriage is a stimulus to work, and again and again elicits those latent activities of mind which produce not only competency, but affluence. Let us take the case of two great lawyers. Lord Cottenham formed in early life the resolution not to marry till his practice was £4,000 a-year, and he married at forty. Lord Eldon married upon nothing

at twenty-one. We do not recommend the latter case for general adoption, but the two examples taken together show how absurd it is to lay down such stringent rules as are now fashionable on the subject of marriage. The issue is the same, under the most opposite circumstances, because both men were workers. And Lord Cottenham was not aided by his late marriage, and Lord Eldon was certainly not impeded by his early one.

## LADY FRANKLIN'S PLANS.

THE plan of Lady Franklin's Arctic Expedition is now arranged. A glance at any recent map of the Arctic regions shows that nearly the whole area east and west of the outlet of the Fish River has been swept by Government searching expeditions. Apart, then, from the fact that the Esquimaux reports point to a very limited locality where the great Arctic mystery lies concealed, we are warranted in hoping that a search, within an area embracing not more than 370 miles of coast, may be rewarded by the discovery of the *Erebus* and *Terror*. Capt. McClintock proposes to make his way down Prince Regent's Inlet, and thence through Bellot's Strait to the field of search; or, should the ice permit, to proceed direct to it by going down Peel Sound, which he has good reasons for believing to be a strait. If prevented by the ice from passing through Bellot's Strait, or going down Peel's Sound, he will abandon the idea of taking his ship through these channels, and, leaving her in safety in Prince Regent's Inlet, will proceed to search for the *Erebus* and *Terror* by sledging parties, so successfully used in the late Expedition, in conducting which Capt. McClintock particularly distinguished himself.

We regret to say, that a strong memorial, recently transmitted from the United States, praying our Admiralty to send the *Resolute* out on a final searching expedition, has failed to arouse official sympathy with a cause now stirring all England. This is the more surprising as the work which remains to be done is extremely small, and Arctic experience shows that the probable risk is slight. The rate of mortality of all the Arctic Expeditions since 1818 (exclusive of that of the missing Expedition) is less than  $1\frac{1}{2}$  per cent. Sir Charles Wood, therefore, as the oracle of the Admiralty, has no foundation for saying that "he does not feel justified in exposing to the risks inseparable from such explorations the lives of further officers and men." Previous searching expeditions, which were necessarily dispatched to unknown regions, have, as we have seen, been singularly fortunate in regard to the slight mortality, and the proposed Expedition, which will have the advantage of being within easy reach of the large depots of stores and provisions at Beechey Island and Port Leopold, will certainly not be attended with greater risk than those which have preceded it. Great scientific interest attaches, moreover, to Lady Franklin's final search, as it will be

carried on in the neighborhood of the North Magnetic Pole. "Let us then hope that the appeal of Lady Franklin will meet a ready response. "I have cherished the hope," says Lady Franklin, in her letter to Lord Palmerston, "in common with others, that we are not waiting in vain. Should, however, that decision unfortunately throw upon me the responsibility and the cost of sending out a vessel myself, I beg to assure your lordship that I shall not shrink either from that weighty responsibility, or from the sacrifice of my entire available fortune, for the purpose, supported as I am in my convictions by such high authorities as those whose opinions are on record in your lordship's hands, and by the hearty sympathy of many more." "Surely, then, I may plead that

a careful search be made for any possible survivor; that the bones of the dead be sought for; that their buried records be unearthed, or recovered from the hands of the Esquimaux; and above all, that their last written words, so precious to their bereaved families and friends, be saved from destruction. A mission so sacred is worthy of a Government which has grudged and spared nothing for its heroic soldiers and sailors in other fields of warfare, and will surely be approved by our gracious queen, who overlooks none of her loyal subjects, suffering and dying for their country's honor." "This final and exhausting search is all I seek in behalf of the first and only martyrs to Arctic discovery in modern times, and it is all I ever intend to ask."

## LOOKING AND LEAPING.

It was a bitterly cold winter's evening, and our little party nestled closer and closer round the blazing fire. No one felt inclined for reading; we all declared we were by far too cozy for that; and all seemed too happy to talk, or felt too much real joy at heart to laugh. So the question was started, as we rubbed our hands before the fire, and gave a pretty little shudder now and then, "What shall we do?" A mixed party of old and young, of both sexes, must necessarily be rather varied in tastes and inclinations, and ours proved no exception; so it was not till some time had elapsed that we all agreed in one thing, to submit our several plans to the patriarch of our circle, who had hitherto kept aloof from the discussion.

Mr. Simpson smiled at our appeal, and bent his dear old silvered head to listen to our suggestions: as, one by one, they were urged on him by their ardent proposers. At last it was agreed that a game of proverbs should be played, with this

improvement, that the proverbs should furnish us matter for useful and entertaining talk rather than for idle questions. Accordingly, proverbs and names were written on slips of card, and the great delight and, in some cases, relief: "Look before you leap" came forth with Mr. Simpson's name. Never shall I forget the venerable old gentleman, as, raising his head, and collecting his thoughts for a minute, he began:

"My dear young friends, it is strange that Providence has given me this little duty to-night? Truly in my lifetime I have seen many a leap and some few looks. The pleasures of a green memory almost repay the other disadvantages of age, and make one bless God for being one of his sheaves near harvest-time. Let us look into the subject a little"—mentally, I suppose, for our expositor took off his spectacles: "it seems to divide mankind into three classes—those who continually look and never leap; those who leap and never



look; and the few who look well and often before they leap.

"He who leaps before he looks often involuntarily looks back *after*, and then, just in time to be too late, sees his own folly and feels its effects. The rash and inconsiderate, if they have any feelings at all, are always habitual, and, what is worse, useless penitents. The die is cast; they have taken an irrevocable step, and that without thought. It is a sad sight to see a man grieving without hope for an event which a momentary glance beforehand might have obviated.

"Equally bad is the part of those who are for ever looking, but never leaping. Going to perform some tremendous feat, thinking on some unheard-of exploit, they spend life like Johnson's famous character, 'fearing to go forward lest he should go wrong.' Alas, for the instability and indecision of human nature! Leaping in this life, my friends, is quite as necessary as looking; we must:

"Act in the living present;  
Heart within, and God o'erhead."

Death will at last surprise these do-nothings, and then they will see how worthless an existence of mere looking is. They have been the world's lumber, useless to themselves, and a stumbling-block in other people's way."

"But the third set, Mr. Simpson? don't be so dismal, please."

"Well, the third set certainly does brighten the picture, which makes me re-

gret the deeper that there are not more of them. The man who looks carefully, deliberately, and, above all, conscientiously before he leaps, will preserve himself from numerous troubles, and will afford a valuable example to the world around him. I do not refer to a mere worldly-wise glance about him, but to the habit of weighing his future actions by the only standard of right—God's revealed will. That man who ponders the influence, for good or evil, of his doings, and invokes his Maker's blessing upon them, will spend a happy life; and when called to take a solemn look at the dread leap of death before him—when preparing earnestly and prayerfully for the great chance that is ever impending, guided by God's good's Spirit, he can not but experience a safe and happy transition into the eternal world.

"Our proverb recommends a medium course between rashness and over-caution. It pictures neither the character of the man who rushes at a chasm, and desperately flings himself over or down it; nor yet him who swings his body to and fro on the brink, who ponders and intends, intends and ponders, till the curtain of night falls, and he finds himself not an inch nearer his destination than he was at sunrise; but it pictures the man who looks thoughtfully, measures distance and force, and leaps with a brave heart and steady eye.

"Remember, my friends, the leaping; but above all things, never forget the looking."

#### DIMENSIONS OF THE AMERICAN LAKES.

—The latest measurements of these fresh water seas are as follows: The greatest length of Lake Superior is 335 miles; the greatest breadth is 160 miles; mean depth, 988 feet; elevation, 627 feet; area, 23,000 square miles. The greatest length of Lake Michigan is 360 miles; its greatest breadth, 108 miles; mean depth, 900 feet; elevation, 687 feet; area, 23,000 square miles. The greatest length of Lake Huron is 200 miles; the greatest breadth is 160

miles; mean depth, 800 feet; elevation, 474 feet; area, 20,000 square miles. The greatest length of Lake Erie is 250 miles; its greatest breadth is 80 miles; its mean depth, 200 feet; elevation, 555 feet; area, 6000 square miles. The greatest length of Lake Ontario is 180 miles; its greatest breadth is 65 miles; its mean depth is 500 feet; elevation, 262 feet; area, 6000 square miles. The total length of all five is 1584 miles, covering an area altogether of upward of 90,000 square miles.

## THE SHAH OF PERSIA.

THE present number of our journal is embellished with a portrait of his Majesty, the Shah of Persia. It was originally painted and engraved for the royal family of England. Mr. Sartain has copied it very accurately and beautifully, from a London print. He appears on a state occasion, wearing his triple crown, radiant and sparkling with precious gems and innumerable diamonds of the purest water, and of immense value, which blaze around his neck, shoulders, and arms; thus exhibiting and illustrating the splendor of oriental magnificence. As an oriental monarch, over the empire of Persia, and recently at war with England, whose ambassador was received, a few months since, with great consideration at the imperial court of France, his portrait in the splendor of Eastern costume is an object of interest and curiosity, with which we trust our readers will be pleased. We only add a brief biographical sketch of this illustrious personage.

The present Sovereign, Mohammed Nassr-ed-din-Shah, ascended the throne in April, 1849. He was then sixteen years of age, and lived away from the court with one of his uncles, the governor of Tabriz. He succeeded to the throne in virtue of his being the nearest of kin in the collateral line of the celebrated Feth ali-Shah, or Baba-khan. Nassr-ed-din-Shah is the fourth sovereign of the Turcoman dynasty of the Kadjars, the origin of whom is curious. The dynasty which preceded that of the Kadjars was founded in the following manner: Under the reign of the Sophis there lived a camel-driver whose bravery procured for him the obedience of a number of his companions, who formed themselves into a band, and under his direction crowned several most successful expeditions with the conquest of the province of Khorasan. Their leader, Nadir, usurped the throne of Persia on the death of Abas III., and caused himself to be proclaimed Shah, or Sovereign of Persia. Nadir Shah brought under

subjection Candahar, Cabul, and several provinces of the Mogul Empire. He was killed, in 1747, by his first lieutenant, whose eyes he had the intention of putting out. His successor, Thamasp-Kouli Khan II., reigned only a few years. Fearful disorders broke out at his death in Persia, and several pretenders to the throne arose. Amongst these was a member of the tribe of Kadjars, which signifies fugitives, named Mohammed Macan-Khan, who conquered Mazandaran and other provinces, and captured Ispahan; he was on the point of conquering all Persia when he fell into the hands of a rival, who beheaded him in 1758. His son, Aga Mohammed Khan, succeeded in proclaiming himself Shah of Persia, in 1794, and he founded the present dynasty. Since 1705, the Court of Persia resides at Teheran; formerly Ispahan had been the capital of the kingdom. In summer the court is driven away from Teheran by the heat, and encamps from June 1 to September 30 at the foot of the Elboorz mountains, in the valley of Goolabek. The ambassadors and great authorities, with the richest inhabitants of the town, accompany the court, and form a magnificent canvas town. The present Shah is of a very mild disposition, and is deeply attached to his mother, who governs his private household. She is only about forty years of age, and is still very beautiful. She has for a secretary a French woman, who married, in Paris, a Persian nobleman, and accompanied her husband to his native home, after having embraced his religion. The Shah has five children, to whom he is greatly attached. His eldest son died a few weeks ago.

THE PERSIAN EMBASSADOR IN PARIS.—His Excellency Feroukh Khan, ambassador for Persia, received a public audience on the 24th from the Emperor, in the throne-room at the Tuileries, and presented the letters accrediting him to his imperial Majesty.

Feroukh Khan, after having presented to their Majesties the persons attached to his suit, handed to the Emperor, in the name and on the part of his sovereign, the Royal Order of Persia, and presents for the Empress and the Imperial Prince.

The ambassador wore a magnificent cashmere gown, trimmed with fur, and ornamented with diamond clasps, white kerseymore pantaloons with gold stripes, and the Astrakan cap. Two of his suite wore the same costume. The rest were in military uniform.

The *Times* correspondent, speaking of the ambassador, says: "He promises to be the admired of all admirers, and to completely efface the traces left in our memories by the majestic proportions of Count Orloff and the brilliancy of his diamonds. In personal advantages, Feroukh Khan may fairly bear a comparison with the other foreign diplomatists. He appears to be a man about forty years of age, or a little more. He wears a beard, black and rich, such as few diplomatic chins could grow, and which excites the envy and despair of the unfledged *attachés* of the older missions, who gaze on him with admiration. His eyes are black and

piercing, and his figure graceful. Among those who accompany him are said to be two cousins of the Sovereign of Persia; and they wear a white scarf over their rich uniforms, no doubt as a sign of their being 'born in the purple chamber.'" The ambassador was, doubtless, ignorant of the simple grandeur of the Imperial Court, and in the indifference for show and splendor which characterizes our courtiers, otherwise he would not have come laden, as he is said to be, with many and rich gifts. He has brought, it seems, a whole cargo of Cashmere shawls and other such articles for presents, so that among an influential portion of the Persian population his *beaux yeux* are not the only charms which will insure him a welcome. Among his *attachés* are one or two literary gentlemen. It would be curious to hear their opinions of men and things in this capital of European civilization, and we may yet be gratified with another series of "Persian letters," surpassing in interest the genuine correspondence which bears the name of Montesquieu. We have an Usbeck and a Ricon on the spot, and they must have left many a Roustan and an Ibben in Teheran, to whom they can confide their thoughts.

## THE SONG OF THE MOUNTAIN STREAM.

### I

List to the song of the mountain stream,  
From its old rocky chamber springing;  
Hailing the earliest morning gleam,  
With its frolicsing—sparkling—singing!  
"Oh! 'tis a glorious thing to bound  
Through a world of such wondrous beauty;  
The flowers are breathing sweet odors around,  
And hark! the old woods with gay music resound:  
Pleasure is glancing,  
Sunbeams are dancing,  
Life is a boon, and enjoyment a duty!"  
  
List to the song of the mountain stream,  
As its murmurs are gently swelling,  
Bounding along with its noontide theme,  
Of the glory of labor telling.  
"I'll water the land, and cool the breeze,  
And set the young grass-blades growing;

I'll creep round the roots of the old oak-trees,  
And call to the cattle their thirst to appease.  
Lambs shall come skipping,  
Birds shall stoop sipping;  
All shall be glad for my pure limpid flowing."

List to the song of the mountain stream,  
As it rolls with its heaving motion,  
Calmly reflecting the sun's last beam,  
Ere it loses itself in the ocean.  
"No more through the beautiful vale I'll wend;  
I have finished life's changeful story;  
Peacefully—thankfully seeking the end,  
Where, with the main, my small tribute shall  
blend,  
Mingling—not dying,  
Smiling—not sighing,  
Singing for ever His greatness and glory."

## LITERARY MISCELLANIES.

**THE AMERICAN BIOGRAPHICAL DICTIONARY.** Containing an Account of the Lives, Character, and Writings of the most Eminent Persons deceased in North America, from its First Settlement. By William Allen, D.D. Third edition. Boston: Published by John P. Jewett & Company; Cleveland, Ohio: Henry P. B. Jewett. 1857. Pp. 905.

This is a work of immense labor and great value, placing in one volume, and within reach, as it does, such an amount of biographical information concerning American celebrities.

The work contains the biographies of over six thousand seven hundred eminent deceased Americans, including statesmen, warriors, patriots, poets, clergymen, lawyers, physicians, merchants, mechanics, and others distinguished in the various walks of life. The compiler, in his preface, says: "I can truly say of my book, that it is my own labor of half a century, during which period, I have been gleaned from the wide field of American history, and from an immense multitude of journals, papers, and memorials of the dead, aided also by the contribution of facts from the friends of the deceased. I have introduced many anecdotes; for they often combine useful and important instruction with amusement. I have attempted truly to describe all characters; and, in following the pathway of truth, I have not invested man with excellencies that do not belong to them, nor regarded with equal favor contradictory systems of faith and irreconcilable principles of conduct. As an honest man, not deprived of intelligence nor void of benevolence, I have, as I think, known how to censure, as well as praise. . . . Intelligent patriotic inquirers concerning the lives of their predecessors may here obtain the information which, unaided by this book, it might be impossible for them to procure; and which they certainly will not find in the books, whether called dictionaries or cyclopedias, containing abridgments of my condensed biography."

**PULPIT ELOQUENCE OF THE NINETEENTH CENTURY.**

Containing Discourses of eminent living Ministers in Europe and America, with Sketches, Biographical and Descriptive. By Rev. Henry C. Fish. With an Introductory Essay, by Edwards A. Park, D.D., Abbott Professor in Andover Theological Seminary. 8vo., pp. 816. M. W. Dodd.

We welcome this additional volume to the great treasure-house of sacred literature. We could have almost wished that it had been numbered Vol. III. of so admirable a work, instead of an isolated supplementary volume, as it purports to be, though it is in entire unity with the two preceding volumes. Its aim and object is well expressed by the compiler, who says: "the publication of this volume completes the original design of the 'HISTORY AND REPOSITORY OF PULPIT ELOQUENCE.' That design was, in brief, to treasure up the acknowledged MASTERPIECES of the great pulpit orators of other ages, and, by means of historical sketches of preaching, and biographical and critical notices of eminent men, and the introduction of their discourses, to furnish a view of the Christian pulpit, in all ages and countries. The two preceding volumes, reaching back to the earliest of the 'fathers,' brought forward a some-

what connected view of preachers and preaching up to the beginning of the present century.

The whole plan and purpose of this and the two preceding volumes was well conceived and admirably executed, in good taste, judgment, and skill, presenting as they do, in one connected and consecutive view, the history and character of pulpit eloquence, preachers, and preaching, through many ages and centuries, down to the present time. The pulpit and its appropriate themes infinitely surpass all others in their interest and importance to human well-being, and therefore such volumes as this and its predecessors can hardly fail of a cordial reception and due appreciation by all lovers of sacred eloquence. - They will form a rich addition to the library of the Christian, or the Christian student, and will be regarded as a valuable and standard work in all choice collections. We bespeak for it an extensive sale. The work is embellished with several portraits, and the letter-press is in the usual good style of the publisher.

**WILEY & HALSTED** have published "Thoughts, Feelings, and Fancies," by C. Nestell Bovee, very elegantly gotten-up in square duodecimo style, and bound in blue and gold. In the preface, the author informs us, that "This book is the result of a habit, early adopted by its author, and long adhered to, of jotting down, from time to time, as occasions served and convenience permitted, such impressions deemed worthy to be noted as occurred to him in the intervals of active professional business. It is now presented to the public, with somewhat of the hope that he may be able, later in life, partly through the suggestions of friends, and in part from the addition of new matter, and the excision of portions of the old, to make it ultimately worthy of a more enduring favor than he is entitled to expect for it in its present form."

**D. APPLETON & Co.** have published, in three duodecimo volumes, an English translation of Alphonse de Lamartine's "History of Turkey." In the preface are given the titles of over thirty historical works consulted by the author, who further says in his preface, that "The study, in the localities as well as in books, of the things of the East, which have charmed, without intention of writing this history, over ten years of our life, and which, in familiarizing us with those delicious countries, have inspired us insensibly with, not indeed the faculty, but at least the passion to reproduce them. Such are our titles to credence with the reader. In verifying them with the original documents he may find them not sufficient, but he will find them strictly true and authentic. In recitals so marvelous it is not the historian that is poetic, but the subject." The same firm has also published a new edition of the "American Angler's Guide," containing numerous additions and improvements, with a new second part, that has not appeared in any previous editions. The work is copiously illustrated.

**IRON CHURCHES IN THE METROPOLIS.**—The iron churches recently erected in London are found to answer every purpose for which they were designed. There are now five of them, one in each of the following districts: Kennington, Kentish Town, Newington Butts, St. George's East, and Holloway. The



Holloway church cost £1000, and is capable of accommodating 700 people. The Rev. J. Rodgers describes it as "a most comfortable place of worship, well ventilated, warm in winter, cool in summer," and adds, "that it can be easily taken down when no longer needed in the district." It is 90 feet long, 40 feet wide, and 20 feet high, lined with wood, which is covered with canvas, and papered. The same clergyman remarks that these churches are exactly adapted to the peculiar wants of the day in respect to church accommodation.

**HOW TO IMPART ODOR TO FLOWERS.**—Every day man is extending his empire over external nature. Flowers, more especially, spring at his bidding, in forms and colors so much richer and more beautiful than the original type, that he might almost boast them for his own. He has now gone a step further: he has acquired the art of imparting odor to the most scentless—thus constraining those beautiful things to delight the sense of smell as well as sight. A florist of Aricia, as we are informed by the *Emporio Italiano*, has made completely successful experiments of this kind in heaping over the roots of flowers an odoriferous compost, and thus producing the required scent. By means, for instance, of a decoction of roses, he has given to the rhododendron the perfect odor of the rose. "To insure success, however, the seeds themselves of the plant to which it is desired to impart fragrance should be acted upon. Let them be immersed for two or three days in any essence that may be preferred, and then thoroughly dry them in the shade, and shortly after sow them. This operation is to give scent to those plants which have none whatever. But if it is required to substitute one scent for another natural to the plant, it is necessary to double or triple the quantity of the essence; and besides preparing the seed, it will be well to modify the nutritive substance. In order to retain the perfume, it will be necessary to repeat the moistening with the odorous substance several days during the spring-season, for two or three consecutive years. Fragrance may be given at the will of the horticulturist to any plant or tree, by boring a hole from one side of the stem to the other, or through the roots, and introducing the odoriferous ingredients into the hole."

**SCHOOL OF PARLIAMENTARY ELOQUENCE.**—Among Mr. Spurgeon's congregation on Sunday morning were the Duchess of St. Alban's, Lady Cooté, Lady Craven, Lady Mowbray, Mr. Baron Bramwell, and between sixty and seventy members of Parliament. The Rev. gentleman preached from Hebrews 4: 9, "There remaineth, therefore, a rest to the people of God." Respecting this young Baptist minister the *Patriot* says: "His success is indicative of two important things, in both of which Congregationalists, especially, ought to rejoice: 1. That the same sensitiveness of the popular mind to powerful preaching which was present in the days of Bunyan, Whitefield, and Wesley, still lives among our countrymen. 2. That the great body of the laity still prefer the savor of sound doctrine. For, it will soon be evident, whether to those who read or to those who hear Mr. Spurgeon, that, young as he is, he has drunk deeply, and still drinks, first at the pure spring of revealed truth; and then, that he delights himself in the study of the elder Puritan and Nonconformist divines. His theology belongs to the school of Usher and Bunyan, unpoluted by the muddy waters of German philosophy or German neology."—*London Paper.*

An important work is now in course of publication at Gratz. It is a complete history of the literature of the Austrian empire, and contains notices of from sixty to seventy thousand works. There are two hundred alone on the origin and rise of the House of Hapsburg. The author, Dr. Schmidt, has visited all the important public and private libraries of the kingdom to make this valuable history as complete as possible. The first volume, which alone has as yet appeared, reaches down to the time of Charles the Fifth, and the second volume, which is shortly expected, is to commence with his reign.

**MONSTER DRUM.**—Amongst other appliances which have been sought to augment the musical effects at the approaching Handel festival (at the Sydenham Palace) is a monster drum, the largest of its kind, as we are informed, that has been constructed. The committee having heard that a skin fit for a drum-head, of unparalleled size, was in the possession of Mr. Distin, the musical instrument maker, at once commissioned its construction, more as an experiment than with any certain conviction of its utility in the orchestra. The result exceeds their most sanguine expectations. The tone is full and resounding, and more resembles that of a deep bourdon organ pipe, both in equality and continuance, than that generally obtained from an instrument of percussion. The vibration continues after the drum has been struck for nearly a minute, and for a longer period its pulsations are distinctly perceptible at a short distance. The diameter is between six and seven feet, the frame is said to contain 300 pieces of mahogany, adroitly joined in a manner best adapted to secure strength and freedom from warping. The instrument is as much under tuning control as a smaller drum. It more resembles a tambourine in its external form than an ordinary drum, having but one head, this form being said to allow greater freedom of vibration. The maker is Mr. Distin, of Melbourne street.—*London paper.*

**RUSSIAN POST-OFFICE ESPIONAGE.**—It may be assumed confidently that every letter before it leaves the Russian Post-Office, if it be not stamped with the seal of a well-known and unsuspected house, or marked with the name of an unsuspected person as the writer, will infallibly be opened and read. The process observed is this: Where the impression of the seal is bold, it is laid on a piece of soft metal, and a sharp blow administered to it from the front side of the letter with a mallet; the wax is broken into fragments and dust, but the impression remains sunk in *intaglio* on the metal, which thus forms a die, with an effigy that is a perfect counterpart of the writer's seal, ready for use. A letter fastened with a wafer previous to sealing it gives a good deal more trouble; in this case a fine jet of gas is directed by means of a blow-pipe against the wax in a circle all round the wafer and the impression, and the wax being melted and the paper being burnt through in that circular line, there is no further impediment to the letter being opened, while the impression remains uninjured on the back. When the latter has been read and closed again, the gas jet is again put in requisition to fill up the perforation of the wax by fusing the neighboring parts, and the whole seal looks as if nothing had happened it. This system of letter espionage is carried on still to as great an extent as under the old régime of the Emperor Nicholas.

It has been determined to separate the office of Keeper of the Archives of Cologne from another situation which has been hitherto held with it, and to appoint to the post a man of high literary character, whose duty will be, not merely to be answerable for the safety of the records intrusted to him, but to prepare for publication the most valuable and interesting of the manuscripts. The archives of the ancient city of Cologne are replete with historical interest, and are amongst the most valuable of the old German records. There are already several candidates for the office, of high literary reputation, in the field, amongst the best known of whom, are Herr Müller of Königswinter, and Dr. Springer of Bonn.

THE Natural History Society of Canada have determined upon republishing, under a committee of scientific members, the "Canadian Naturalist and Geologist." The first number of the new volume has just been received in England, and will be continued regularly to subscribers every alternate month.

THE Correspondence of the Emperor Charles VI. (Charles III. of Spain) has recently been published, and conveys new and valuable information respecting the war of the Spanish Succession.

THE DEATH-WATCH.—This name evidently has its origin from dark and superstitious times. It is nothing more nor less than a diminutive beetle, the little creature that perforates the round holes in old worm-eaten furniture and wood-work. "The ticking," says an eminent naturalist, "is produced by striking its head against the wood," in the progress of these perforations; and how yet often has it struck terror in the minds of the attendants of the sick, and, from communicating the omen to the patient, the skill of the physician has been completely baffled? Even yet, in isolated rural districts, the belief that it is the harbinger of death remains unshaken.

LAST WORDS OF MARIA THERESA.—To her son Joseph, who was persuading her to try and sleep, she said, "Joseph, when God is calling, who dares sleep?"

TEACHING THE EYE.—The great majority of mankind do not and can not see one fraction of what they might see. "None are so blind as those that will not see," is as true of physical as moral vision. By neglect and carelessness we have made ourselves unable to discern hundred of things which are before us to be seen. A powerful modern writer has summed this up in one pregnant sentence: "The eye sees what it brings the power to see." How true is this! The sailor on the look-out can see a ship where the landman sees nothing; the Esquimaux can distinguish a white fox amidst the white snow; the American backwoodsman will fire a rifle ball so as to strike a nut out of the mouth of a squirrel without hurting it; the Red Indian boys hold their hands up as marks to each other, certain that the unerring arrow will be shot between the spread-out fingers; the astronomer can see a star in the sky, when to others the blue expanse is unbroken; the shepherd can distinguish the face of every sheep in his flock; the mosaic worker can detect distinctions of color where others see none; and multitudes of additional examples might be given of what education does for the eye.

A LITERARY ANTIQUITY.—Among the literary treasures in Durham Cathedral, is a book with the cover executed in needle-work by Lady Arabella Stuart, niece of Mary, Queen of Scots, and granddaughter of Henry the Seventh, who died a lunatic in the Tower. She was a well-educated woman, and worked the cover to show her respect for Greek and Hebrew learning. Her handiwork is now a little tattered, and one day a lady-visitor to the cathedral, being admitted to the library, with a young woman's kindness and love of neatness, offered to "mend the cover"—an offer which, of course, was declined.

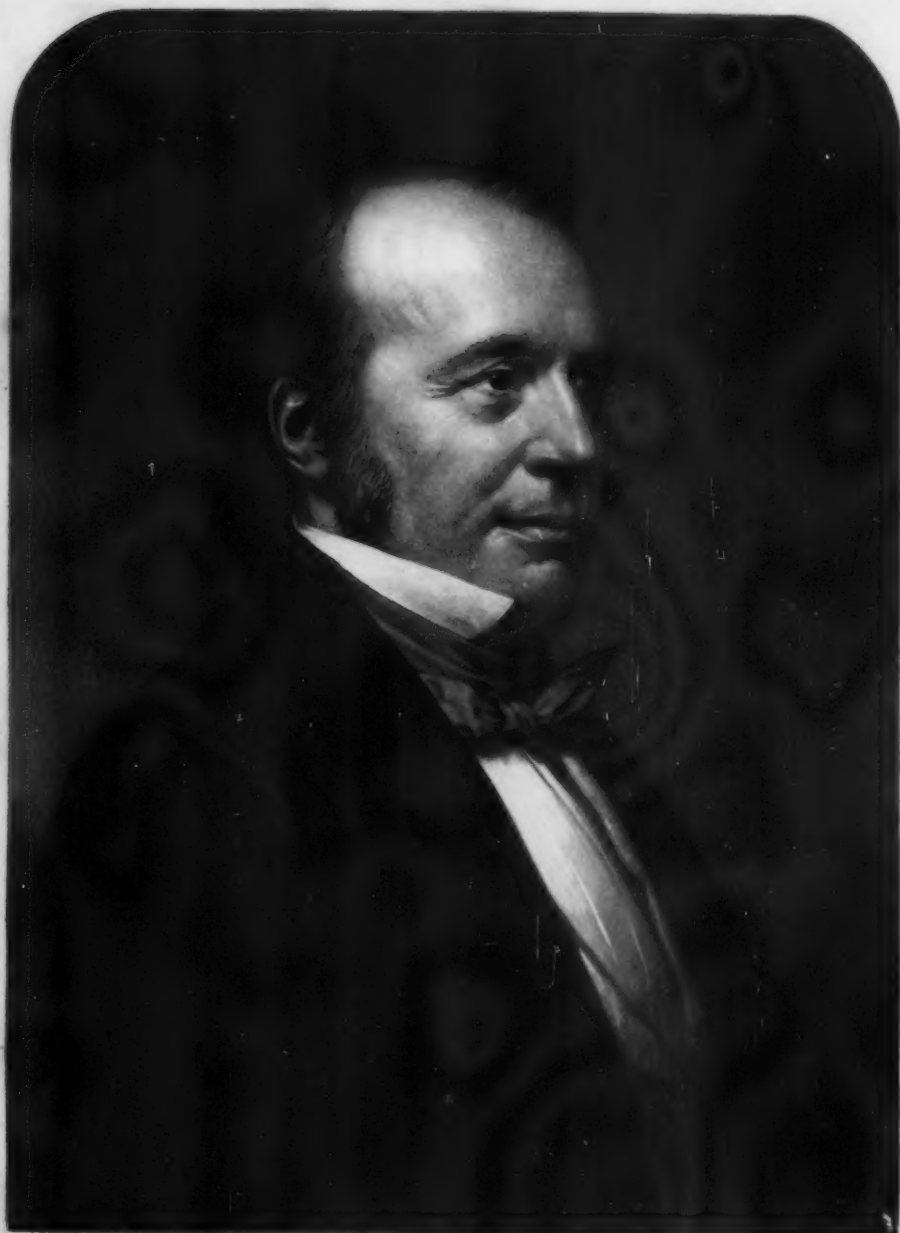
THE INSECT WORLD.—Professor Agassiz says, that more than a lifetime would be necessary to enumerate the various species of insects and describe their appearance. Meiger, a German, collected and described six hundred species of flies, which he collected in a district of ten miles circumference. There have been collected in Europe twenty thousand species of insects preying on wheat. In Berlin, two professors are engaged in collecting, observing, and describing insects and their habits, and already have published five large volumes upon the insects which attack forest trees.

INDUSTRIAL APPLICATIONS OF CASTOR OIL.—M. Bouis, a French chemist, has made some important discoveries respecting castor oil, especially when it is found that a piece of ground in Algiers will yield three times as much castor oil as olive oil, and twice as much as palm oil; and that his investigations will enable castor oil to be applied to industrial purposes, to which it was not applicable formerly. By distilling castor oil upon concentrated potash, the sebatic acid and caprylic alcohol are extracted as separate products, which may be turned to good account. The sebatic acid, having a high melting-point, may be employed instead of stearic acid in the manufacture of candles; and if it be mixed with stearic acid, the hardness and quality of the candles are greatly improved, and in appearance they resemble porcelain. It is possible to use caprylic alcohol in all the purposes to which ordinary alcohol is put, particularly in illumination, and in the composition of varnishes; and from it certain compound ethers may be derived, of remarkable odor, similar to those which are at present largely used in commerce.—*Medical Times*.

THE "Quarterly Review" contains an anecdote of Lord Raglan, when his arm was amputated. The authority is the Prince of Orange. The Prince, we are told, used to recount that not a word announced the entry of a new patient, nor was he conscious of the presence of Lord Raglan (then Lord F. Somerset) till he heard him call out in the usual way: "Hallo! don't carry away that arm till I have taken off my ring." Neither the wound nor the operation had extorted a groan from the wounded soldier.

BEES.—A swarm of bees in the natural state contains from 10,000 to 20,000 of the insects, whilst in hives they number from 30,000 to 40,000. In a square foot of honeycomb there are about 9000 cells. A queen-bee lays her eggs for 50 or 60 consecutive days, laying about 500 daily. It takes three days to hatch each egg. In one season a single queen-bee hatches about 100,000 bees. It takes 5000 bees to weigh a pound.





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LOUIS AGASSIZ.

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